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MISSION ROCK ENERGY CENTER

Preliminary Staff Assessment

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MISSION ROCK ENERGY CENTER (15-AFC-02) PRELIMINARY STAFF ASSESSMENT

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Mike Monasmith

INTRODUCTION

On December 30, 2015, Mission Rock Energy Center, LLC (applicant or project owner), a wholly-owned subsidiary of Calpine Corporation, submitted an Application for Certification (AFC) to develop and operate the Mission Rock Energy Center (Mission Rock or project), a power plant with battery units. The power plant would be a nominal 275-megawatt (MW) electric power project collocated with battery units for electricity storage that can deliver an additional 25 MW/100MWh (25 MWs for a period of four hours). The 9.79-acre project site parcel is currently paved with asphalt and concrete and used to store recreational vehicles and boats. The project site is located at 1050 Mission Rock Road in Ventura County, California. The power plant would consist of five natural gas-fired combustion turbine generators (CTGs), each with a 60-foot tall exhaust stack. Mission Rock would also feature clutch technology that would disconnect the combustion turbines from the generators, allowing the generators to serve as synchronous condensers to provide "emission-less" voltage support. Proposed transmission infrastructure and linear features include a new natural gas pipeline, either measuring 2.58 miles (Route A) or 2.14 miles (Route B), and a 1.7 mile recycled water pipeline. The transmission line, also called the generator tie line or "gen-tie" would be 6.6 miles in length and connect Mission Rock with Southern California Edison's (SCE) Santa Clara Substation.

This Preliminary Staff Assessment (PSA) contains staff's initial, independent and objective evaluation of the proposed Mission Rock project. The PSA examines engineering, environmental, public health and safety, and environmental justice aspects of the proposed project, based on information provided by the applicant, government agencies, interested parties, independent research, and other sources available at the time the PSA was prepared. The PSA contains analyses similar to those normally contained in a Draft Environmental Impact Report required by the California Environmental Quality Act (CEQA).

Approval (certification of a license) for a thermal power plant with a generating capacity of 50 MWs or greater falls under the exclusive authority of the Energy Commission (Pub. Resources Code, § 25500 et seq.). As such, the Energy Commission is the lead agency under CEQA. The Energy Commission's certified regulatory program provides the environmental analysis that satisfies CEQA requirements. This document also determines whether the project is in conformance with all applicable local, state, and federal laws, ordinances, regulations and standards (LORS).

Determinations of LORS compliance are made through staff's active coordination with other regulatory agencies and incorporation of their findings, such as the Ventura County Air Pollution Control District (VCAPCD) and its Preliminary Determination of Compliance (PDOC). The result of staff's research, collaboration and comprehensive process of discovery and analysis are recommendations to the full Energy Commission for requirements to mitigate any significant adverse environmental effects resulting from the proposed project.

For the technical areas of Air Quality, Land Use, and Soil and Water Resources, staff cannot conclude at this time that the project would comply with all applicable LORS. For the technical areas of Air Quality, Environmental Justice and Transmission Systems Engineering, staff cannot conclude at this time that the project impacts would be mitigated. Staff in the remaining technical areas concludes that with implementation of staff's recommended mitigation measures described in the conditions of certification, the project would not cause a significant adverse impact to the environment, public health and safety, or to environmental justice communities, and would comply with applicable LORS.

ENERGY COMMISSION SITING PROCESS

This PSA is not the decision document for these proceedings, nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local, state, and federal LORS. Rather, the PSA will serve as staff's preliminary evaluation of the proposed project that will begin a 45-day comment period and result in the eventual publication of the Final Staff Assessment (FSA).

The FSA will serve as staff's testimony during evidentiary hearings to be held by an assigned Committee of two Energy Commissioners (Commissioner Karen Douglas is the Presiding Member, and Commissioner Janea Scott is the Associate Member). During evidentiary hearings, the FSA, and input provided by the parties (staff, applicant, and intervenors), governmental agencies, and the public, will be considered by the Committee. The Committee will then deliberate and review the record before writing and filing the Presiding Member's Proposed Decision (PMPD) for a 30-day public comment period, which includes a public meeting conducted by the Committee to consider comments on the PMPD from the parties, government agencies, and members of the public. Following the public comment period, the Committee will forward the PMPD, and any errata, to the full Energy Commission for consideration and action. Following a public hearing, most likely during a regularly scheduled Business Meeting, the full Commission will make a final decision on the Mission Rock proposal, expected in mid- to late-2018. If approved and constructed, Mission Rock could serve the Moorpark sub-area of the Big Creek/ Ventura local reliability area, if a power purchase agreement is secured.

PROPOSED PROJECT LOCATION

The main access to the Mission Rock site would be via Mission Rock Road, located in unincorporated Ventura County, 2 miles west of the city of Santa Paula, at 1025 Mission Rock Road. Access to the site from Santa Paula to the northeast or Ventura to the southwest is via State Route (SR) 126, also called the Santa Paula Freeway or Orchard Farm Road. Local site access is through the South Briggs Road exit from SR-126, then to South Pinkerton Road, and Mission Rock Road. There is secondary emergency access west from Shell Road, which connects with Mission Rock Road.

The Mission Rock site is located in an industrial park, in an area that is zoned General Industrial (Ventura County M-3, with minimum lot size of 10,000 square feet). Adjacent land uses include the Granite Construction Company asphaltic concrete plant and asphalt recycling facility, automobile dismantling facilities, vehicle storage for crushed cars, auto repair and salvage yards, and agricultural production.

APPLICANT'S PROJECT PURPOSE AND OBJECTIVES

As stated by the applicant, Mission Rock's primary objective is to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology to meet the need for new local capacity in the Moorpark sub-area of the Big Creek/Ventura local reliability area of SCE's service territory. Operationally flexible resources are increasingly valuable to help integrate variable renewable resources such as solar and wind for grid operation to continuously balance electricity supply and demand. Furthermore, peaking capacity is needed to respond to increases in the local demand for electricity that typically occur during summer afternoons. Mission Rock would provide real-time energy and voltage support to the grid. Mission Rock would have the ability to start and achieve full operational capacity within 10 minutes, and would have black-start capability using the onsite batteries (starting combustion turbines from a completely cold and idle state) without the need for a diesel-fueled emergency generator. This would likely incrementally reduce the local air quality impacts of the project. A complete discussion of the air quality impacts can be found in the **Air Quality/GHG** section of this staff assessment. This includes the new sources of air emissions and discussions of all anticipated air quality impacts that would be associated with the Mission Rock project.

The same energy storage system that provides Mission Rock with black-start capability would also provide an additional 25 MW/100 MW-hours (MWh) or 25 MWs for up to four hours of flexible, preferred resource capacity to the grid. The energy storage system would be used to store energy during times of grid over-generation, which may result from variable renewable generation. The stored energy would then be delivered back to the grid at a later time when needed, primarily after solar generation declines in the late afternoon to early evening. Mission Rock would provide a resource to balance the variability of renewable resources, to satisfy peak energy and capacity needs during

high load periods, and to support the electrical grid during outages of transmission lines and other generating facilities.

Mission Rock's objectives are as follows:

- Combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology, to meet the need for new local capacity in the Moorpark sub-area of the Big Creek/Ventura local reliability area of SCE's service territory;
- Safely construct and operate a 275-MW, natural gas-fired, simple-cycle generating facility to meet SCE's growing need for local capacity due to the pending retirement of once-through cooling plants in the Moorpark sub-area of the Big Creek/Ventura local reliability area;
- Site Mission Rock as near as possible to an SCE substation with available transmission capacity to serve the Moorpark sub-area; and
- Site Mission Rock in an existing industrial area on a brownfield site, to minimize environmental impacts.

PROJECT ALTERNATIVES

CEQA requires consideration and discussion 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, and evaluate the comparative merits of the alternatives" (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)).

Project alternatives developed for Mission Rock are fully analyzed in the **Alternatives** section of this document. Some of the environmental impacts of constructing and operating Mission Rock would be reduced or avoided under the project alternatives evaluated in this staff assessment. In the case of Mission Rock, with some exceptions articulated above (e.g. Air Quality), environmental impacts are reduced to less than significant with implementation of recommended conditions of certification and/or through compliance with applicable LORS. Summaries of the comparative environmental impacts of the alternatives are as follows:

- The **No-Project Alternative** would avoid several of Mission Rock's significant environmental impacts. Continuation of existing conditions at the site would cause a greater potential for impacts to occur relating to site flooding, storm water runoff, and water quality. The estimated fiscal benefits of Mission Rock would not occur.
- The **Petrochem Refinery Off-site Alternative** would avoid Mission Rock's significant impacts on built environment historical (cultural) resources and visual resources associated with the Santa Clara Valley Rural Historic District (SCVRHD),

  which would be greatly affected by the proposed transmission line alignment. This alternative would reduce potentially significant impacts of high-velocity thermal plumes on aircraft and pilot safety. This alternative would avoid impacts on riparian habitat; however, it would increase the potential for listed bird species to collide with transmission line structures.

- The **Del Norte/Fifth Street Off-site Alternative** would avoid Mission Rock's significant impacts on built environment historical resources and visual resources associated with the SCVRHD. However, this alternative could cause significant impacts on surficial archaeological and ethnographic resources, which is an impact that would not occur under Mission Rock. This alternative would avoid construction noise impacts on least Bell's vireo, a state and federally listed endangered bird species; however, it would increase the potential for listed bird species to collide with transmission line structures. Due to its location near Camarillo Airport's arrival and departure flight tracks, this alternative would cause significant and unavoidable impacts on aircraft and pilot safety from high-velocity thermal plumes.
- The **Ormond Beach Area Off-site Alternative** would avoid Mission Rock's significant impacts on built environment historical resources and visual resources associated with the SCVRHD. This alternative would avoid construction noise impacts on least Bell's vireo, and it would avoid impacts on riparian habitat. This alternative would reduce potential impacts on listed bird species from collisions with transmission line structures. Nitrogen deposition could impact sensitive habitat in the vicinity of this alternative site. This alternative could cause significant and unavoidable impacts on aircraft and pilot safety from high-velocity thermal plumes; a mitigation measure recommending a change in the regular naval operations at Naval Base Ventura County Point Mugu to avoid the site could reduce the impact to less than significant. However, the feasibility of such a mitigation measure is unknown.
- The 200-megawatt (MW) **Battery Energy Storage Alternative** would be developed in place of the proposed project at the Mission Rock site. This alternative would not generate high-velocity thermal plumes, and potentially significant impacts on aircraft and pilot safety would be avoided. Air quality staff concludes that project operations greenhouse gas emissions would be reduced under this alternative. Impacts relating to project operations noise and vibration, wastewater discharge, and water quality would be reduced. The transmission line route and grid connection is assumed to be the same as proposed for Mission Rock, and the significant cultural and visual resources impacts on the SCVRHD would also occur under this alternative.

The No-Project Alternative would not satisfy Mission Rock's basic project objectives. The three off-site alternatives could potentially satisfy the project objectives, including the underlying project purpose, which is to meet the local capacity requirement (LCR) need in the Moorpark sub-area of the Big Creek/Ventura local reliability area by 2021. However, the feasibility of off-site alternatives is questionable given that the Mission Rock applicant does not have site control over the sites.

The 200-MW, 4-hour Battery Energy Storage Alternative is based on the project description for the battery energy storage system (BESS) that is planned at the Alamitos Generating Station in Long Beach, but configured by the size limitations of the Mission Rock site. This alternative is included because staff anticipates that parties to this proceeding and the public will expect inclusion of an alternative that would avoid onsite use of fossil fuels for power generation.

In August 2017, the California Independent System Operator (California ISO) prepared and submitted a special study to the Energy Commission describing a subset of alternative resource scenarios—including batteries—that could meet the LCR need

absent construction and operation of new incremental natural gas-fired generation. Staff acknowledges that the configuration of batteries in staff's alternative does not appear to match the alternative resource scenarios evaluated by the California ISO to meet the Moorpark sub-area LCR. However, staff discusses its 200-MW battery energy storage configuration as a way to provide a relative comparison of the environmental effects of a battery-based alternative to the proposed project.

Staff's Battery Energy Storage Alternative could contribute to meeting the LCR need (i.e., the underlying project purpose) and would reduce some environmental impacts associated with a natural gas-fired project. A Battery Energy Storage System that would fully meet the LCR need, which staff is not responsible for or capable of designing, would not reverse the conclusions in the comparative analyses of impacts for this alternative, but could change the relative impact comparisons. For example, impacts on visual resources would require analyzing the height and massing of structures containing the batteries in a proposal for such a project.

Another project objective is to develop a 275-MW, natural gas-fired, simple-cycle generating facility; the Battery Energy Storage Alternative would not satisfy this project objective.

SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION

Below in **Executive Summary Table 1** is a summary of environmental impacts and mitigation proposed in this PSA.

Executive Summary Table 1
Environmental and Engineering Assessment

Technical Area	Complies with LORS	Impacts Mitigated	Additional Information Required
Environmental Assessment			
Air Quality/Greenhouse gases	**Indeterminate**	**No**	**Yes**
Biological Resources	Yes	Yes	No
Cultural Resources	Yes	Yes	**Yes**
Environmental Justice	Not Applicable	**Indeterminate**	**Yes**
Geology and Paleontology	Yes	Yes	No
Hazardous Materials Management	Yes	Yes	No
Land Use	**Indeterminate**	Yes	**Yes**
Noise and Vibration	Yes	Yes	No
Public Health	Yes	Yes	No
Socioeconomics	Not Applicable	Yes	No
Soil and Water Resources	**Indeterminate**	Yes	**Yes**
Traffic and Transportation	Yes	Yes	**Yes**
Transmission Line Safety and Nuisance	Yes	Yes	No
Visual Resources	Yes	Yes	No
Waste Management	Yes	Yes	No
Worker Safety and Fire Protection	Yes	Yes	No
Engineering Assessment			
Facility Design	Yes	Not Applicable	No
Power Plant Efficiency	Not Applicable	Yes	No
Power Plant Reliability	Not Applicable	Not Applicable	**Yes**
Transmission System Engineering	Yes	**Indeterminate**	**Yes**

Environmental Assessment

Air Quality/Greenhouse Gases

Air quality issues related to the project are addressed through staff's analysis, additional staff recommended conditions of certification, and in the Ventura County Air Pollution Control District's (VCAPCD) Preliminary Determination of Compliance (PDOC) for the project. At the time of publication, the applicant has not yet identified the specific emissions reduction credits (ERCs or offsets) they would use to comply with VCAPCD's rules and regulations or identified mitigation required to mitigate impacts under CEQA. The applicant needs to identify the ERCs that would be used to satisfy the emission offset requirements and identify mitigation required to mitigate impacts under CEQA to ensure compliance with LORS and reduce the projects impacts to less than significant ahead of publication of the Final Staff Assessment and Final Determination of Compliance. Until the air quality impacts are fully mitigated, the project's air quality impacts would be considered significant.

If built, Mission Rock would be required to participate in California's greenhouse gas (GHG) cap-and-trade program. This cap-and-trade program is part of a broad effort by the State of California to reduce GHG emissions as required by Assembly Bill 32 (Núñez, Chapter 488, Statutes of 2006) (AB 32), which is implemented by the California Air Resources Board. This program has been extended to at least 2030 by California Code of Regulations, Appendix E, Title 17, and effective October 1, 2017.

BIOLOGICAL RESOURCES

No habitat for special-status wildlife occurs on the Mission Rock site; however, there is suitable habitat in the project vicinity for two bird species listed as state and federal endangered: least Bell's vireo (*Vireo bellii pusillus*) and western-yellow billed cuckoo (*Coccyzus americanus occidentalis*). Noise from construction work on-site would create significant impacts for least Bell's vireo that noise abatement measures would not reduce to less than significant. Staff's proposed Condition of Certification **BIO-11** requires least Bell's vireo protocol surveys, and if present, then daily monitoring during construction, implementation of noise reduction measures, incidental take authorization in the event of nest failure during construction, and mitigation. In addition, proposed Condition of Certification **BIO-13** would require the project owner to obtain proof of take exemption from the U.S. Fish and Wildlife Service. Construction noise impacts to any nesting western yellow-billed cuckoo or least Bell's vireo near pole #3 of the generator-tie (gen-tie) line would be avoided because construction of the gen-tie would occur from September 16 through January 31 or if raptors are nesting September 16 through January 1. This is outside of the breeding season.

Loss of sensitive riparian habitat from the installation of gen-tie pole #16 would require a streambed alteration agreement, as covered under proposed Condition of Certification **BIO-8**, to mitigate these impacts. Although the proposed project site and gen-tie corridor contain no suitable habitat for the southwestern willow flycatcher (state and federal listed species), critical habitat for the species does occur along the Santa Clara River approximately 500 feet from the proposed project. Collision with the gen-tie from nocturnal migration would create significant impacts for southwestern willow flycatcher. The willow flycatcher, which is virtually indistinguishable from the southwestern willow flycatcher, may also be impacted. Staff's proposed Condition of Certification **BIO-12** would authorize incidental take (as impacts from collision with the gen-tie are unavoidable). It would also require that funds are provided to an organization currently enhancing and/or restoring suitable habitat for both the southwestern willow flycatcher and willow flycatcher to mitigate impacts to less than significant.

Staff has included proposed conditions of certification that will minimize and mitigate impacts to biological resources to a level that is less than significant. The construction and operation of the project would comply with all federal, state, and local LORS relating to biological resources if staff's conditions of certification are adopted and implemented.

CULTURAL RESOURCES

Staff concludes that Mission Rock could result in significant, direct impacts to buried archaeological resources that may qualify as historical or unique archaeological resources under CEQA. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** and **CUL-15** would ensure that the applicant would be able to respond quickly and effectively in the event that archaeological resources are found buried beneath the project site during construction-related ground disturbance. Impacts to buried archaeological resources, should they occur, could be reduced to a less than significant level. Mission Rock would comply with all applicable cultural resources LORS.

Staff's analysis of Mission Rock with regard to ethnographic resources is inconclusive at this time. Staff is aware of two potential ethnographic resources, a traditional collecting area and a traditional cultural landscape, near the proposed project area and is continuing to consult with California Native American tribes who have knowledge of the area. Staff anticipates that these resources will be fully identified and analyzed in the FSA.

Staff concludes that the proposed project would result in significant, direct, and cumulative impacts to the Santa Clara Valley Rural Historic District, including approximately 225 contributing resources. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-15** would reduce the project's significant impacts to the district and its contributing resources to a less than significant level.

ENVIRONMENTAL JUSTICE

Until air quality impacts have been fully mitigated, staff concludes that construction and operation of Mission Rock may cause significant direct, indirect, or cumulative environmental justice impacts. Therefore, the project impacts associated with air quality on the environmental justice population and whether the impacts are disproportionate are **indeterminate**.

GEOLOGY AND PALEONTOLOGY

Staff concludes that the potential adverse impacts to project facilities from geologic hazards during its design life are less than significant. Similarly, staff concludes the potential adverse cumulative impacts to potential geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project, if any, are less than significant. It is staff's opinion that the proposed Mission Rock facility can be designed and constructed in accordance with all applicable LORS, and in a manner that both protects environmental quality and assures public safety.

HAZARDOUS MATERIALS MANAGEMENT

Staff concludes, based on its evaluation of the proposed Mission Rock project, along with staff's proposed mitigation measures, that hazardous materials use, storage, and transport to the site would not present a significant risk of impact to the public. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable laws, ordinances, regulations, and standards. In response to

California Health and Safety Code, section 25531 et seq., the applicant would be required to develop a Risk Management Plan.

LAND USE

Mission Rock could be consistent with the applicable state LORS pertaining to land use planning, and may not cause a significant impact under the CEQA. However, until the air quality impacts are fully mitigated, the project's consistency with the applicable standards in the Ventura County Non Coastal Zoning Code is **indeterminate**. Staff has not identified any significant adverse direct or cumulative land use impacts resulting from the construction or operation of the proposed project.

NOISE AND VIBRATION

If built and operated in conformance with the proposed noise conditions of certification, Mission Rock 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.

Staff recommends conditions of certification addressing worker and employee noise protection (**NOISE-3** and **NOISE-5**), measurement, and verification that noise performance criteria are met at the project's noise-sensitive residential receptors (**NOISE-4**). Also, **NOISE-1** and **NOISE-2** establish a public notification and noise complaint process to resolve any noise complaints regarding project construction or operation.

Staff retains the responsibility to monitor the enforcement of these conditions of certification. Staff would work under the authority of the Energy Commission's compliance project manager to monitor and review the reporting of project performance during construction and the full term of operation, including facility closure.

PUBLIC HEALTH

Staff has analyzed the potential public health risks associated with construction and operation of the Mission Rock project using a highly conservative methodology that accounts for impacts on the most sensitive individuals in any given population. Staff concludes that there would be no significant health impacts from the project's emissions. Exposure to off-site nonresident workers or recreational users would be lower with correspondingly lower health risks. According to the results of staff's Health Risk Assessment, both construction and operating emissions from the project would not contribute significantly or cumulatively to morbidity or mortality in any age or ethnic group residing in the project area.

SOCIOECONOMICS

Mission Rock would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts. The project would not induce substantial population growth or displace existing housing or people, necessitating the construction of replacement housing elsewhere. Mission Rock also would not negatively impact acceptable service

ratios of the project area's law enforcement services, parks and recreation facilities, public libraries, or schools, necessitating the construction of new or physically altered governmental facilities that could result in significant environmental impacts. Staff-proposed Condition of Certification **SOCIO-1** would ensure project payment of school impact fees consistent with local practices.

SOIL AND WATER RESOURCES

Staff evaluated the potential for the project to cause accelerated wind or water erosion and sedimentation, exacerbate flood conditions near the project, adversely affect surface or groundwater supplies, degrade surface or groundwater quality, and comply with all applicable LORS and state policies. Staff also discusses the present and future flood risks in terms of the severity of consequences from flood hazards. Staff concludes that the project would not result in significant adverse impacts that cannot be avoided or mitigated. With respect to flood risks from river flooding, levee failure, and dam failure, present-day risks are low. When considering the future effects of climate change, the future potential of flood risk is low to medium.

The recycled water supply and wastewater disposal facilities proposed for project operation are currently unavailable to serve the project. Staff is working with the Los Angeles Regional Water Quality Control Board to evaluate whether it is feasible for the proposed recycled water supply to be permitted for industrial use, what permit requirements may be needed, and the schedule for obtaining the necessary permit. It is also unclear whether the proposed wastewater disposal facility can receive the project wastewater. The facility is operating under a temporary permit and is undergoing review for a long-term license. Staff is working with Ventura County staff to evaluate the likelihood that the facility can accept the project wastewater and the schedule for obtaining the permit. Staff will provide further analysis of LORS compliance for these elements in the FSA.

Due to the uncertainty regarding the project's recycled water supply and wastewater disposal, Mission Rock's compliance with associated LORS is **indeterminate**. Assuming that these facilities are able to obtain the proper permits needed to construct and operate the project, Mission Rock would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

TRAFFIC AND TRANSPORTATION

The construction and operation of Mission Rock could result in significant impacts to the nearby traffic and transportation system. Staff has determined that with implementation of staff's proposed conditions of certification, Mission Rock's impacts to the surrounding traffic and transportation system would be less than significant. Condition of Certification **TRANS-2** would require implementation of a Traffic Control Plan that would reduce the potential for accidents caused by construction traffic exiting the project site to travel eastbound on State Route 126. Conditions of Certification **TRANS-6** and **TRANS-7** would mitigate potentially significant impacts to aviation from the thermal plumes that Mission Rock's combustion turbine generator (CTG) stacks would generate. Condition of Certification **TRANS-6** would require obstruction marking and lighting of the CTG

stacks to alert pilots of the location of the plumes. Condition of Certification **TRANS-7** would require the project owner to work with the Federal Aviation Administration (FAA), the Santa Paula Airport Manager, and the Ventura County Department of Airports to notify all pilots using the Santa Paula airport and airspace above the Mission Rock site of potential plume hazards. Although staff has determined that none of the project components would penetrate the navigable air space, out of an abundance of caution staff has requested the applicant submit FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, for the project's exhaust stacks and generator tie line. Staff has not yet received a completed FAA hazard determination for Mission Rock.

With implementation of the proposed conditions of certification (**TRANS-1** through **TRANS-7**), the project 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.

TRANSMISSION LINE SAFETY AND NUISANCE

The applicant proposes to build a 230-kilovolt (kV) transmission line (generator tie line) to connect the proposed Mission Rock project to the existing SCE Santa Clara substation. The 6.6-mile long generator tie line between the gas turbines and the Santa Clara substation (consisting of 36 monopoles) would be owned, operated and maintained by the applicant. The proposed 6.6-mile long line would conform to applicable LORS. Since the proposed transmission would primarily cover an agricultural area, with no nearby residences, there would be no potential for residential electric and magnetic field exposures, which have been of some health concern. With the four proposed conditions of certification, any safety and nuisance impacts from construction and operation of the proposed line would be less than significant.

VISUAL RESOURCES

The proposed Mission Rock project could potentially impact scenic vistas within the Santa Clara Valley Rural Historic district, and damage a scenic resource, namely historic Eucalyptus windrows of Ellsworth Barranca, identified by Cultural Resources staff as a contributing element of historic significance. Site-specific information on these proposed tree removals was requested from the applicant, but data responses to date lack the specificity needed to fully understand the impacts at key observation points (KOP), particularly at KOP 3. Condition of Certification **VIS-2** therefore calls for site-specific tree surveys and a vegetation management plan to provide a more adequate understanding of project impacts and site-specific mitigation opportunities. Condition **VIS-2** also calls for various specific mitigation measures to address impacts from proposed tree removals, and calls for coordination with related Cultural Resources Conditions of Certification (**CUL-14**, **CUL-17**) where visual impacts would affect tree groupings identified by Cultural Resources staff as historic landscape elements.

With effective implementation of all recommended conditions of certification, potential visual impacts of the project could be reduced to less-than-significant levels in the long term, and brought into conformance with applicable state and local LORS pertaining to visual resources.

WASTE MANAGEMENT

The applicant would implement a Soil Management Plan to provide guidance for proper identification, handling, disposal and containment of any contaminated soil that may be encountered during construction and ground-disturbing activities. Mission Rock's proposed waste management methods and mitigation measures, along with the proposed conditions of certification for waste recycling and diversion requirements, would ensure that wastes generated by the proposed project would be appropriately managed and not result in a significant impact to local waste management and disposal facilities.

WORKER SAFETY AND FIRE PROTECTION

Staff concludes that the proposed Mission Rock project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff recommends the project owner provide a Project Construction Safety and Health Program, a Project Operations and Maintenance Safety and Health Program, and a Demolition 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 **-7**. The proposed conditions of certification require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable LORS.

The Ventura County Fire Department has stated that its ability to respond to emergency calls would not be significantly impacted by the construction and operation of the Mission Rock project.

Engineering Assessment

FACILITY DESIGN

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

POWER PLANT EFFICIENCY

Mission Rock would generate a nominal 275 MWs (net output[1]) of electricity at an overall project fuel efficiency of 39 percent lower heating value (LHV[2]) at maximum full load[3]. While it would consume substantial amounts of energy, it would do so in a sufficiently efficient manner to satisfy the project's objectives of producing peak-load electricity and ancillary load-following services. It would not create significant adverse effects on energy supplies or resources would not require additional sources of energy supply, nor would it 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.

POWER PLANT RELIABILITY

In terms of equipment availability, plant maintainability and maintenance program, fuel availability, and power plant reliability in relation to natural hazards, the project would be built in accordance with typical industry norms for reliable power generation. However, to fully ensure its reliable operation, a reliable source of process water supply (recycled water) is needed. The applicant has not secured this yet. Please see **Soil and Water Resources** above. Staff will provide further analysis regarding process water supply in the FSA. The battery energy storage system and synchronous condenser would perform reliably and would not adversely affect the project's availability factor.

TRANSMISSION SYSTEM ENGINEERING

The proposed Mission Rock transmission facilities between the new generator and the SCE Santa Clara Substation, including the step-up transformer, a new 230-kV overhead generator tie line, and termination, are acceptable and would comply with all applicable LORS. Mission Rock has withdrawn from the California ISO's interconnection process for Queue Cluster 9 (Cluster 9) and rejoined in Queue Cluster 10 (Cluster 10). The Cluster 10 Phase I Interconnection Study will not be available to the Energy Commission until the first quarter of 2018. At this time, environmental impacts associated with possible improvements to existing transmission infrastructure beyond the project's interconnection point are **indeterminate**.

CUMULATIVE IMPACTS

Preparation of a cumulative impact analysis is required under CEQA. In the CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (Cal. Code Regs., tit. 14, § 15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other

[1] Net output is the facility's gross electricity generation minus its parasitic electricity (load) requirements, or the amount of electricity that the facility delivers to the electricity grid.

[2] LHV is lower heating value, or a measurement of the energy content of a fuel correcting for post-combustion water vapor.

[3] At site average annual conditions of 59°F and relative humidity of 60 percent (PPP 2015a, § 2.7.1, Table 2.7-1, Case 3.)

projects, is “cumulatively considerable” (Cal. Code Regs., tit. 14, § 15130(a)(2)). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (Cal. Code Regs., tit. 14, § 15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

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

DEFINITION OF THE CUMULATIVE PROJECT SCENARIO

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

Under CEQA, there are two acceptable and commonly used methodologies for establishing the cumulative impact setting or scenario: the “list approach” and the “projections approach.” The first approach would use a “list of past, present, and probable future projects producing related or cumulative impacts.” (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The second approach is to use a “summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.” (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)). This PSA uses the “list approach” for purposes of state law to provide a tangible understanding and context for analyzing the potential cumulative effects of the proposed project. All projects used in the cumulative impacts analyses for this PSA are listed in the cumulative projects table (**Executive Summary Table 2**), and locations are shown on **Executive Summary Figure 1**.

APPROACH TO CUMULATIVE IMPACT ANALYSIS

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

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

Executive Summary Table 2
Mission Rock – Master Cumulative Project List

ID	*Project Title*	*Description*	*Location*	*Distance To Project (Miles)*	*Status*
1	Todd Road Jail Evidence Storage Building, PL14-0125	Adjustment to conditional use permit, (CUP) 4735-2 to authorize a 20,000 sq. ft. evidence storage building at the Todd Rd Jail.	600 Todd Rd, Santa Paula	0.38	Constructed
2	Todd Road Jail Medical Wing Expansion	60,000 sq. ft. of a medical wing.	600 Todd Rd, Santa Paula	0.38	Approved
3	Permit Adjustment to Authorize a One-Year Time Extension for a Zoning Clearance for Construction (LU 11-0018)	Continued use of truck transportation operation and proposed new use of contractor's service and storage yard. Authorizes installation and use of storage racks, air compressor, cargo container, covered used oil storage tank, and storage enclosure. 1,000 gallon septic tank installation as part of the septic system to provide sewage disposal services for 1200 sq. ft. building. Domestic water provided by city of Santa Paula Water Works.	734 Mission Rock Road, Santa Paula	0.57	Approved. Zoning clearance issued Jan. 2017. Building permits not pulled yet.
4	Santa Paula West Business Park Specific Plan (SPWBPSP), 3-CDP-04	Mixture of light manufacturing, research and development, professional office and supporting commercial uses. Proposed on 53-acres of agricultural land.	Telegraph Rd & Beckwith Rd, Santa Paula	1.93	Proposed
5	Calpipe Phase 2, 13-CDP-05	New 30,000 sq. ft. industrial building.	957 Calpipe Rd, Santa Paula	2.02	Under Construction
6	O'Kote Pipe Factory Project, 15-CDP-06	Request for 52,000 sq. ft. industrial factory. 120,800 sq. ft. surface lot for on-site parking for 111-vehicles. Parcel currently used for agricultural row crops; half of the parcel proposed for development- other half to remain in agricultural production.	630 Todd Ln, Santa Paula	2.13	Proposed
7	12-CUP-03	New vehicle parking/maintenance use and eventually a waste disposal operation business.	906 Corporation St, Santa Paula	2.26	Approved
8	13-CDP-06	Two new commercial/light industrial buildings. 36,000 sq. ft. general light industrial (Phase 2).	100-106 Calavo St, Santa Paula	2.38	Under Construction

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
9	14-DR-10	6 multi-family units	327 Acacia Rd, Santa Paula	2.54	Under Construction
10	Major Modification to CUP LU08-0095, PL15-0104	Change salvage facility to a recyclables collection and processing facility. Demolish existing 5,392 sq. ft. structure.	1449 Los Angeles Ave, Ventura	2.95	In Planning Process
11	Darling Apartments, PROJ-7166	Mixed Use, 43 apts., 2 live/work units and 2,100 sq. ft. commercial/retail.	11166 Darling Rd, Ventura	2.95	Under Construction
12	Santa Maria Street Industrial Park Development, 12-CDP-05 05-TM-02	571,370 sq. ft., 10 lots.	324 W Santa Maria St, Santa Paula	2.97	Under Construction
13	Citrus Dr/Citrus II, PROJ-8427	78-unit, 3-story apt building.	11156-1172 Citrus Dr, Ventura	3.05	In planning process
14	Crosstown Water Pipeline Project, 10-CI-03	8,065 ft. buried water pipeline to connect discharge pipeline from Steckel Water Conditioning Facility at the Steckel Dr/Santa Barbara St intersection to Pleasant St/10th St intersection. Includes 3 small potable water and storm water pipelines.	Citywide, Santa Paula	3.10	In design stage, construction projected for Spring 2018
15	Gisler Ranch Mixed Use, PROJ-8428	3-story mixed use development- 43 apts. and 1,200 sq. ft. retail.	11101 Carlos St, Ventura	3.15	In planning process
16	Parklands Specific Plan and Tentative Map, PROJ-4222	CDFW Lake and Streambed Alteration Agreement No. 1600-2014-0170-R5. Alteration of Brown Barranca in the construction of Parklands Development Project (499 residential units, several park spaces on 66.7 acres) in 4 phases.	Southwest of Telephone Rd and Wells Rd intersection, Ventura	3.27	Under Construction
17	Parklands Apartments, PROJ-4222	173 apts. 3 stories with a community building.	Southwest corner of Wells and Telegraph Rd, Ventura	3.29	Under Construction
18	Northbank,	117 single family homes, 31 affordable triplex/quadplex,	Eastern terminus of	3.30	In planning

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
	PROJ-6270	50 apts.	North Bank Dr. Ventura		process
19	Habitat for Humanity, 13-CDP-02	Eight, 4-bedroom, single family residences.	Trinity Ln and Santa Paula St, Santa Paula	3.31	Under Construction
20	Westwood/Parklands, PROJ-03829	216 detached homes, 110 attached homes.	Southwest corner of Wells Rd and Telegraph Rd, Ventura	3.36	Under Construction
21	Rancho Verde Farmworker Housing, PROJ-10410	24 farmworker housing apartment units, 2 stories.	Saticoy Ave and Blackburn Rd, Ventura	3.54	Approved
22	Enclave at Northbank, PROJ-4184	84 residential lots, density bonus concessions for 98 residential units consisting of 84 single-family units and 14 multi-family (7 duplexes).	Southeast corner of Saticoy Ave and Northbank Dr, Ventura	3.55	Under Construction
23	The Farm (Residential), PROJ-8446	131 single family homes, 34 townhomes, 2 parks and 3 mini parks.	Southeast corner of Telegraph Rd and S Saticoy Ave, Ventura	3.64	Approved
24	13-CDP-09	37 unit airport condo modification.	1170 Montebello St, Santa Paula	4.10	Approved
25	Strickland Mutual Water Company-PL16-0017	Conditional Use Permit for addition of water supply, transmission and storage facilities for use with existing water supply, storage, and distribution system for a period of 40 yrs. or to 2056.	4952 Joan Way, Oxnard	4.19	Approved
26	15-CDP-07	Multi-family dwellings, 11 units.	112 S 12th St, Santa Paula	4.29	Proposed
27	Santa Barbara County Reliability Project	Reconstruct existing 66-kV subtransmission facilities within existing and new utility rights-of-way between the Santa Clara Substation in Ventura County and the Carpinteria Substation located in Santa Barbara County.	City of Ventura, Ventura County to City of Carpenteria, Santa Barbara County	4.56	Approved. Coastal Development Permit required from Santa Barbara County. Estimated 2 year

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
					construction.
28	14-CUP-03	Truck storage yard	1485 E Main St, Santa Paula	4.69	Proposed
29	Voelker Property, PROJ-8150	Residential Project- 18 single family homes. APN 088-281-040	8324 Telegraph Rd, Ventura	4.76	In planning process
30	14-CDP-02	44 single family homes	1226 Ojai Santa Paula Rd, Santa Paula	4.96	Proposed
31	Williams Homes / River Rock Project (City Project No. 2014-CDP-02)	40 new homes and the retention/rehabilitation of the Hardison House main residence and barn/stables. Project requires demo of existing structures (excluding Hardison House, barn/ stables) which are a historic resource. 9.18-acres to remain open space.	1226 Ojai Road, Santa Paula	5.01	Approved
32	10-CDP-01	2,786 sq. ft. caretaker unit, 7,800 sq. ft. warehouse building.	250 S Hallock Dr, Santa Paula	5.01	Completed
33	Limonera Company - East Area 1 Specific Plan Amendment	501-acre site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2-acres of civic uses for school facilities, and 225.3-acres open space and park uses.	Telegraph Rd. and Padre Ln (east of Santa Paula Creek), Santa Paula	5.04	Construction would occur continuously during 10-year period. Development of four phases based on market conditions. In design stage (specific maps). Designing Phase 1. Preliminary for multi-family units submitted in March/April 2017. Hallock Center Area portion of site (SE) developed portion.

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
					Tree removal, grading. Construction start date unknown.
34	04-TM-01	19 lot residential subdivision.	Cliff Dr and Forrest Dr, Santa Paula	5.24	Plan Check
35	CUP Agricultural Contractor Service and Storage Yard, PL15-0146	Development of 5-acre property with 5,000 sq. ft. ag service building, 6,250 sq. ft. ag building, 100 sq. ft. pump house, two fire suppression holding tanks, two 10,000 gallon domestic water holding tanks, 156,788 sq. ft. of impervious/paved area for truck and equipment staging and storage, and 16,925 sq. ft. of landscaping. Water provided by onsite well and waste water discharged into septic mound system. Accessory office spaces proposed in both buildings	4300 Santa Clara Ave, Oxnard	5.36	Approved- plans in review with building and safety division
36	Garden Acres Mutual Water Company Minor Modification and Conditional Certificate of Compliance to CUP (Case No. LU06-0019)	Continued use of existing water supply, storage and distribution system for a period of 40 yrs.; installation of water transmission and storage facilities; and approval of a Conditional Certificate of Compliance to create legal lot for Tax Assessor's Parcel 149-0-041-185.	Friedrich Road between Nyeland Ave and Orange Dr, Oxnard	5.75	Approved
37	RiverPark West K-8 Steam School Project	Construction of 78,000 sq. ft. campus on a 10.2-acre site (K-8 classrooms, library, administration/multi-purpose facilities). Currently in Phase 1 of 2 Phases.	3001 North Ventura Rd, Oxnard	5.96	Under Construction
38	PL16-0085	Relocation antenna within the Conditional Use Permit (SES Americom satellite) control facility. Installation of 9 utility poles (40 ft. tall) and electrical lines within county right-of-way along the southern and eastern property	5990 Solano Verde Rd, Somis	6.43	Approved

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
		boundary. Lines to connect with Southern California Edison (SCE) utility lines that serve FAA and future transmission bandwidth needs. One 200 sq. ft. storage shelter.			
39	North Pleasant Valley (NPV) Treatment Facility	Construction and operation of groundwater treatment facility, including drilling and production of two new wells, installation of pipelines for distribution of raw well water, product water and brine. Facility to provide treated water to Camarillo's existing service area, with average design capacity of 7,500 acre ft. per yr. of production water.	Las Posas Rd and Lewis Rd, Camarillo	6.68	Phase 1- design phase 2016/2017 and approval for ground water extraction of 4,500 acre feet per year Project approved by city of Camarillo. Phase 2 expected early 2018 with drilling of wells
40	La Barranca Residential Project, PROJ-6098	Construction of 9 single-family residences with 3 floor plan types (3,053-3,589 sq. ft. with 64 parking spaces).	5533 Foothill Road, Ventura	6.76	Under Construction
41	Island View Communities, PROJ-2008	154 apartments, 4 stories, 3.8-acres.	1776 Alameda Ave, Ventura	6.80	Under Construction
42	Calleguas Municipal Water District (CMWD) Salinity Management Pipeline	Phase 1- pipeline from Camrosa Water Reclamation Facility in southwestern Ventura County to ocean outfall at Port Hueneme. Phase 2 (Lower Reach) of the Calleguas Regional Salinity Management Pipeline approximately 6.6 miles of pipeline.	SR 34 (Somis Road) and 118 (Los Angeles Ave), County Wide	7.15	Phases 2D and 2E (i.e., Upper Reach) are in design.
Not shown on map*	LU09-0082	Development and operation of an outdoor recreational vehicle (RV) storage facility (asphalt parking lot to accommodate 112 RVs and a 533 sq. ft. dwelling) Project site is 6.63-acres, of which 2.74-acres is proposed for the development. Remaining 3.89-acres subject to a restrictive covenant for environmentally sensitive habitat	5753 N Ventura Ave, Ventura	9.3	Environmental document preparation

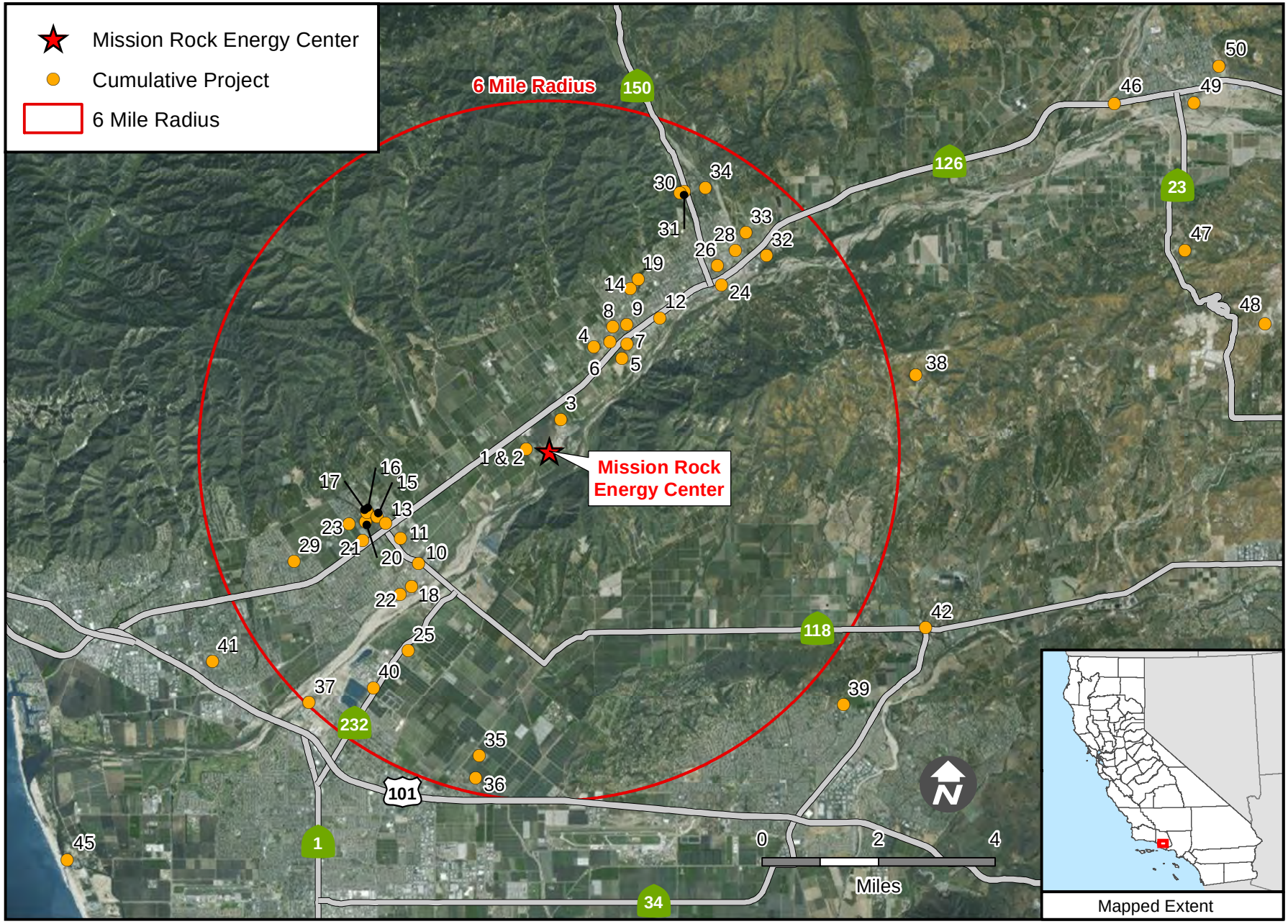
ID	Project Title	Description	Location	Distance To Project (Miles)	Status
		preservation related to Conditional Certificate of Compliance SD06-0046.			
Not shown on map*	Nesbitt Lease, Modification of CUP No. 3319, PL15-0060	Authorize re-activation, operation and maintenance of existing oil and gas and production facilities on Nesbitt Lease and use of Koenigstein Rd as access from Nesbitt Lease site to SR-150 for all project-related vehicle traffic, including tanker trucks.	East of 12606 Koenigstein Road, Santa Paula	9.53	Approved
45	Puente Power Project	Project sited on approximately 3 acres of the north portion of existing 36-acre Mandalay Generating Station (MGS). Replaces 2 gas-fired steam-generating units at MGS with a new General Electric Frame 7HA.01 single-fuel combustion turbine generator and associated auxiliaries. Developed on previously disturbed vacant brownfield land.	393 North Harbor Blvd, Oxnard	10.83	On hold. With decommissioning and demolition of MGS units 1 & 2 total condstruction duration would be 39 months.
46	State Route 126 Safety Route Enhancement Project	Two design options. Design Option 1: Concrete Median Barrier Design, Option 2: Raised Median Island with Visual Markers. Common Features of Both Design Options: 1. Construct roundabouts 2. Widen road curves 3.Acceleration/deceleration lane at railroad crossings 4.Construct retaining walls. Improve existing highway access including driveways at various locations. Project length approximately 7 miles.	State Route 126 and E street, Fillmore	11.36	Proposed (Draft Environmental Impact Report to be released late summer/fall 2017) Construction slated to begin 2021.
47	PL14-0086	Modify conditions of CUP 4913: Project extended for an additional 30 yrs., increase max daily truck trips from 300 to 372 one-way trips per day, increase operating days from 180 to 250 days per year, and change Condition No. 61b.1, 61c.1, 61c.3 related to reporting requirements to County of Ventura Public Works Geologist. Water provided by onsite well with 20,000 gallon reservoir. Access provided via Grimes Canyon Rd.	1700 Grimes Canyon Rd, Fillmore	11.42	Pending (Environmental document preparation)
48	PL13-0116	Major modification to the existing CUP4571-5 that would allow the land owner/mine operator to continue to develop the property's natural resources into commercial products. Requested changes include: 1. Changes to permit boundary including expansion of sand and gravel mining	Skyline Rd. and Windover Rd, Fillmore	12.47	On Appeal

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
		areas (80 to 200 acres and an excavation area 48 to 134 acres). 2. Extension of life of CUP to 2043 (30 years)-existing expires 2012 but remains in effect while owner processes a CUP modification application. 3. Increase production rate from 270,000 tons/year to 700,000 tons/year. 24-hour onsite operations. 4. Establish: Average daily trips (ADT) of 240 and max. peak of 300 one way trips on any one day. Of the 240 average daily trips, 186 trips per day (avg.) for delivery of sand and gravel products and 54 trips per day (avg.) for import and export of recyclable materials and the products derived from them. 5. Allow import and storage of recyclable asphalt, inert C&D materials, concrete, and clean fill dirt for processing and reuse or resale in bulk or in bags. 6. Overnight parking of 20 trucks to reduce traffic burden of off-site truck staging. 7. Aggregate extraction, in limited areas. 8. Production and sale of ready mix concrete, concrete products, asphalt plant mix, sand soil mix, crushed and natural base mix. 9. Accessory structures necessary for above described uses.			
49	Heritage Valley Parks Specific Plan Draft Program EIR	CDFW has executed Lake and Streambed Alteration Agreement No. 1600-2015-0273-R5, pursuant to section 1602 of the Fish and Game Code to the project Applicant, Hearthstone. Project proposes completion of remaining project activities related to the Heritage Valley Park development project. Current proposed activities include debris basin to act as velocity dissipater. Pad approx. 128 X 98 ft. Single bridge pier (12-14 ft high and 4 ft wide) placed within Pole Creek to accommodate bridge. This middle pier will support vehicular bridge crossing over Pole Creek with pedestrian access. Work performed in summer when Pole Creek has no surface water within channel. If any surface water present, will be routed through the debris basin bypass channel.	Central Street and State Highway 126, Fillmore	12.57	
50	PL15-0139 Stion	Requests a CUP to authorize installation and operation of	67 East	13.25	Approved

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
	Solar Facility	a 3.0 megawatt (MW) alternating current 4.3 MW direct current photovoltaic utility-scale solar renewable energy production facility on approximately 25 acres. Installation of solar panel arrays on ground mounted racks covering a majority of site while maintaining on-site circulation. Water provided by existing water well with emergency reservoir tank of 5,000 gallons for firefighting purposes. Other than ancillary storage structures, no habitable buildings proposed. No additional grading or drainage improvements. No native vegetation disturbed by project.	Telegraph Road, Fillmore		
Not shown on map*	AD12-0071	24-unit multi-family development (APN 056-0-113-050) within Piru Area Plan land use designation. Three residential buildings of 5,253 sq. ft. each housing eight rental units. A 1,390 sq. ft. community building is proposed. Access to site provided by 24-ft wide private driveway via Center Street with 24 ft wide secondary access driveway via Market Street to south. 45 parking spaces would be provided on-site. No native vegetation removed, though five heritage-sized pepper trees would be removed. Water provided by Warring Water Service Inc. and waste water disposal provided by Ventura County Sanitary District No. 16.	4072 E Center St., Piru	19.54	In Review
Note: *Not shown on map as the project is outside of the map view.					

EXECUTIVE SUMMARY - FIGURE 1

Mission Rock Energy Center - Cumulative Projects Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, National Geographic

INTRODUCTION

Mike Monasmith

PURPOSE OF THIS REPORT

Mission Rock Energy Center, LLC (applicant or project owner), a wholly owned subsidiary of Calpine Corporation (Calpine), proposes to construct, own, and operate the Mission Rock Energy Center (Mission Rock or project). Calpine[1] owns and operates more than 5,000 MW of combined-cycle baseload and peaking operations, 500 MW of simple-cycle peaking operations, and 700 MW of renewable power capacity in California.

This Preliminary Staff Assessment (PSA) is the California Energy Commission (Energy Commission) staff's independent analysis of the Mission Rock Application for Certification (AFC). Mission Rock will be a natural gas-fired, simple-cycle combustion turbine power plant with battery units located west of the city of Santa Paula in Ventura County. Mission Rock would include natural gas-fired, simple-cycle combustion turbine electrical generating (CTG) units that would generate up to I of 275 megawatts (MW), collocated with battery units for electricity storage that can deliver an additional 25 MW/100MWh (25 MW for a period of four hours). Mission Rock will also be fitted with a clutch system so that it can provide voltage support by operating as a synchronized condenser. This PSA is a staff document that analyses this project. It is not promulgated by the siting Committee (two Energy Commission Commissioners assigned to this project), nor is it a draft decision.

The PSA is an informational document and describes the following:

- the proposed project;
- the existing environment;
- staff's analysis of whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
- the environmental consequences of the project including potential public health and safety impacts;
- the potential cumulative impacts of the project in conjunction with other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies, local organizations which may lessen or eliminate potential impacts;

[1] Calpine entered into a definitive agreement on August 18, 2017 with Energy Capital Partners and a consortium of investors to acquire Calpine for $5.6 billion. The transaction, expected to close in the first quarter of 2018, will have no effect on the company's current management or financial initiatives.

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- staff's proposed conditions of certification (conditions) under which the project should be constructed and operated, if it is certified for construction and operation; and
- project alternatives.

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

The PSA presents staff's initial conclusions about potential environmental impacts and conformity with laws, ordinances, regulations and standards (LORS), as well as proposed conditions that apply to the design, construction, operation and closure of the project. The analyses for most technical areas include discussions of proposed conditions. The conditions contain staff's recommended measures to mitigate the project's environmental impacts, if any, and to ensure conformance with LORS. Each proposed condition is followed by a proposed means of "verification" to ensure the condition is implemented.

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

ORGANIZATION OF THE PRELIMINARY STAFF ASSESSMENT

The PSA begins with an Executive Summary, this Introduction, followed by the Project Description. The next 23 section chapters contain the environmental, engineering, public health and safety and alternatives analyses of the proposed project. The final chapter is a list of staff that contributed to preparing this PSA.

Each of the 23 technical area assessments includes a discussion of:

- applicable LORS;
- the regional and site-specific setting;
- project specific and cumulative impacts;
- mitigation measures;
- closure requirements;
- conclusions and recommendations; and
- conditions of certification for project construction and operation.

ENERGY COMMISSION SITING PROCESS

The Energy Commission has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 MW or larger in the state of California. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). The Energy Commission must review thermal power plant AFCs to assess potential environmental and engineering impacts, including potential impacts to public health and safety, potential measures to mitigate those impacts, and compliance with applicable governmental laws or standards (Pub. Resources Code, § 25519 and § 25521(d)).

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

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

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

Following the publication of this PSA, Energy Commission regulations establish a mandatory minimum 30-day public comment period (Cal. Code Regs., tit. 20, § 1742(c).) The comment period, which has been extended to 45 days, is used to: 1) elicit input on the PSA analysis; 2) resolve issues between parties to the project; and 3) where consensus on issues exists, narrow the scope of issues to be adjudicated in subsequent evidentiary hearings. During the public comment period, staff will conduct a workshop in the Santa Paula community to discuss the conclusions, proposed mitigation, and verification measures in the PSA. Based on the workshop dialogue and the written comments received, staff will refine its analyses, correct errors, and finalize conditions of certification to reflect any changes agreed to between the parties. These revisions and changes will be presented in the Final Staff Assessment (FSA).

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

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

AGENCY COORDINATION

As noted above, the Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, the Commission staff typically seeks comments from, and works closely with, other regulatory agencies that administer LORS that are applicable to proposed projects. A request for agency participation and a CD copy of the Mission Rock Energy Center AFC was sent to agencies on February 16, 2016. The agencies notified and associated with the Mission Rock siting review include the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Federal Emergency Management Agency, Federal Air Administration, California Public Utilities Commission, State Water Resources Control Board/Los Angeles Regional Water Quality Control Board, California Department of Fish and Wildlife, Caltrans, Ventura County Air Pollution Control District, San Joaquin Valley Air Pollution Control District, Ventura County Sheriff's Department, Ventura County Fire Protection District, County of Ventura Environmental Health Department, County of Ventura Department of Airports, County of Ventura Resource Management Agency Planning Division, Ventura County Watershed Protection District, Ventura County Transportation Commission, Briggs Elementary School District, Santa Paula Elementary School District, the City of Santa Paula, including the Santa Paula City Fire Department, and the California Independent System Operator (California ISO).

OUTREACH

The Energy Commission's outreach program is primarily facilitated by the Public Adviser's Office (PAO). This is an ongoing process and efforts are discussed in greater detail in the **Environmental Justice** section of this staff document.

LIBRARIES

On February 16, 2016, Energy Commission staff sent the Mission Rock AFC to local libraries close to the proposed project site, including the Blanchard Community Library in Santa Paula and the Saticoy Library in the Ventura suburb of Saticoy. The AFC was also sent to the state libraries in Eureka, Sacramento, Fresno, San Francisco, Los Angeles and San Diego.

INITIAL OUTREACH EFFORTS

Energy Commission staff and the Public Advisor's Office coordinated closely on public outreach early in the review process. A Notice of Receipt of the AFC and Notice of Public participation were docketed and mailed to the project mail list on February 11, 2016. Public notices for the project in both English and Spanish were published on June 17, 2016.

The PAO contacted local elected officials, Native American tribal groups (which were separately contacted by the Cultural Resources staff), and community groups, including Central Coast United for a Sustainable Economy (CAUSE), Mixteco Indigena Community Organizing Project (MICOP), and the United Farm Workers. The PAO also published notices in English and Spanish in the local newspapers prior to the June 28, 2016 Site Visit, Informational Hearing and Environmental Scoping Meeting. Spanish-language interpreters facilitated public comment and participation at the hearing.

Energy Commission regulations require staff to notice, at a minimum, property owners within 1,000 feet of a project and 500 feet of any linear facility (such as transmission lines, gas lines, and reclaimed water lines). This was done for the project on February 11, 2016.

PROJECT SCHEDULE

Mission Rock is filing this AFC under the CEC's 12-month licensing process. Depending upon final approval, construction of the facility could be expected to begin in November 2018. Following construction, pre-operational testing of the power plant would be expected to begin in April 2020, and full-scale commercial operation would be expected to begin by September 2020.

MEETING CALIFORNIA'S ENERGY NEEDS

As discussed in the Introduction of this PSA, the Energy Commission is one of several entities that shape the development of California's energy infrastructure; its power plant siting process must be understood in the context of other regulatory and decision-making processes that implement state energy and environmental policy, and ensure reliable delivery of electricity at reasonable rates.

UTILITY PLANNING AND PROCUREMENT PROCESSES

Large thermal power plants are developed by (a) publically-owned electric utilities who serve retail customers and (b) private ("merchant") developers who provide energy and

capacity from these plants to investor-owned utilities under a long-term contract.[2] In the case of publicly-owned utilities, the decision to add a large natural gas-fired or other thermal plant (or contract with such a plant) to its portfolio rather than meet customer needs with other resources (e.g., energy efficiency and demand response programs, renewable generation) is made by the utility's governing authority. Decisions by the governing authority are assumed to be in accord with state energy and environmental policy as expressed in law, ordinance and regulation. They are also assumed to consider the impact of resource development on ratepayer costs and ratepayer preferences with respect to the environmental impact of meeting customer energy and electric system reliability needs. The election of governing officers (or their appointment by elected public officials) and public noticing and open meeting requirements imposed on government agencies allow for extensive public participation in and influence on the utility's planning and procurement processes and decisions.

Investment decisions made by state's investor-owned utilities (IOU) are subject to approval by the California Public Utilities Commission (CPUC). While an IOU may, in theory, choose to build or contract with a large natural gas-fired power plant, it cannot recover the costs of an investment "in rates" (from customers) unless the CPUC approves doing so. The CPUC is, in turn, bound by statute to impose the state's *loading order* on the IOUs.[3] This requires the state to meet its energy needs with "preferred resources," including energy efficiency and demand response programs and measures, and distributed and utility-scale renewable generation. Multi-hour energy storage has been added to the list as the development of solar generation will increasingly create mid-day energy surpluses; storage can absorb this surplus and discharge the energy a few hours later, reducing the need for natural gas-fired generating capacity to meet late afternoon and early evening energy needs.[4] Clean, efficient natural-gas fired generation is only to be procured to the extent that it is necessary to cost-effectively meet reliability needs and standards.

THE CPUC AND LONG-TERM PROCUREMENT PLANNING

The need for natural gas-fired generation capacity in the California ISO footprint[5] to reliably serve customers of the IOUs and other entities under CPUC jurisdiction[6] over a ten-year planning horizon is assessed biennially in the CPUC's Long-term Procurement Planning (LTPP proceeding). This proceeding is the forum in which the state's major

[2] While developers seek Energy Commission certification for power plants without such a contract, they do not construct and operate them without one. Doing so would pose an unacceptable risk of several hundred million dollars given very low projected wholesale energy prices.
[3] A discussion of the loading order can be found in PUC Section 9615
[4] The state has set a target of 1,825 MW of multi-hour storage for the IOUs to meet by 2020
[5] The California ISO (Independent System Operator) is one the state's five balancing authorities, entities that are responsible for ensuring that (their portion of) the electric grid is operated reliably. The service territories of the state's major IOUs all lie within its boundaries.
[6] Deregulation of the electricity sector in the 1990s led to the creation of *energy service providers* (ESP), entities that compete with the major IOUs to provide retail electricity services. ESPs procure wholesale electricity and use the transmission and distribution infrastructure developed by the IOUs to deliver the energy to retail customers. Over the past decade, community choice aggregators (CCA) have formed; these are cities and counties that provide retail electricity services in competition with the IOUs. These entities are also under CPUC jurisdiction.

IOUs are authorized to finance the development of new "least-cost, best-fit" generation (on behalf of both IOU customers and those of energy service providers and community choice aggregators) needed to reliably meet electricity demand.[7] This need, specified in terms of: (a) the MW of capacity needed; (b) the desired or required operating characteristics of the resource(s) to be financed; and (c) the location of proposed additions if required for local reliability, is a function of planning assumptions that reflect the state's commitment to dramatically reduce GHG emissions from the electricity sector. The MWs of capacity needed are driven by:

- Peak demand growth due to economic and demographic factors, as well as reductions in the peak demand for utility-provided energy due to the deployment of distributed (rooftop) solar. The Energy Commission's biennial ten-year demand forecast is used to develop these projections.
- Reductions in peak demand due to committed (funded) and uncommitted (yet-to-be-funded) energy efficiency and demand response programs. Energy efficiency projections are developed in collaboration with the Energy Commission.
- Reserve margins (dependable capacity in excess of peak demand) needed to ensure system reliability, normally assumed to be 15 to 17 percent of peak demand, but also including any additional dispatchable capacity needed to ensure reliability given variation in the output of variable energy resources (e.g., wind or solar generation). These assumptions are informed by technical analyses performed by the California ISO.
- Capacity needed in transmission-constrained areas to ensure local reliability under extreme (1-in-10 year) weather conditions. These assumptions are informed by technical analyses performed by the California ISO.
- Capacity needed to remedy shortfalls in system ramping and/or turndown ability, (i.e., flexible resources). These assumptions are informed by technical analyses performed by the California ISO.
- Capacity to be provided by new renewable resources built/contracted with to meet the state's RPS; and,
- Capacity to be lost due to retirement, for example, capacity expected to cease operation as a result of the State Water Resources Control Board policy regarding the use of once-through cooling.

As noted above, this capacity need is evaluated over a ten-year planning horizon due to the length of time it takes to authorize the financing, selection, permitting, and construction of new power plants.

7 These include costs that account for environmental impacts such as the projected emissions allowance costs (those required under the AB 32 cap-and-trade program, as well as those required for criteria pollutants).

The development of these planning assumptions in a public CPUC proceeding (frequently based on Energy Commission and California ISO analyses developed in their public proceedings) ensures public participation.

The planning assumptions adopted for use in the LTPP proceeding, and thus determinant of the amount of new capacity authorized, consider both the state's loading order for resource development, as well as the expected deployment of specific types of preferred resources. In other words, in authorizing the procurement/financing of natural gas-fired generation capacity by an IOU, the CPUC assumes that all cost-effective amounts of preferred resources will have been procured.

Once an IOU is authorized to finance the development of a natural gas-fired power plant or plants, it issues a Request for Offers (RFO), specifying the operating and locational characteristics the plant(s) must have. Offers are evaluated with the help of a CPUC-assigned Independent Evaluator and the input of Procurement Review Groups (PRG), whose members consist of non-market participants, including ratepayer representatives, industrial and environmental groups. Contracts with power plants are nominated for procurement and then considered in another public CPUC proceeding.

PREFERRED RESOURCE CAPACITY OF MISSION ROCK

If approved and constructed, Mission Rock would serve the Moorpark subarea of the Big Creek/Ventura local reliability area in the Greater Los Angeles basin. In 2013, the CPUC authorized Southern California Edison to procure at least 215 MW and up to 290 MW of conventional natural gas-fired generation capacity in the Moorpark sub-area in order to meet anticipated long-term local capacity requirements by 2021 in the Moorpark sub-area.[8] This authorization was based on California ISO's study showing the need for in-area generation of the Moorpark sub-area, where the most critical contingency is the loss of a transmission line followed by the loss of another pair of transmission lines.

The CPUC authorization considered two significant future developments. One was the expected retirement of the Ormond Beach and Mandalay Generating Station by December 2020. These local resources contribute more than 1,940 MW to meeting the Moorpark and Big Creek – Ventura local capacity requirements; it is their retirement that effectively creates the need for the development of new capacity. The second was the deployment of preferred resources (energy efficiency, demand response, renewable generation capacity, and energy storage) anticipated to reduce development of natural gas-fired generation or contribute toward meeting local capacity requirements.

[8] Decision Authorizing Long-term Procurement for Local Capacity Requirements (D.13-02-015), California Public Utilities Commission, February 13, 2013.

Mission Rock's primary objective is to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology to meet the need for new local capacity in the Moorpark subarea. The energy storage system would be used to store energy during times of grid over-generation, which would then become flexible, preferred resource capacity (25 MW for up to four hours) delivered back to the grid later when needed. Mission Rock would provide a resource to balance the variability of renewable resources, to satisfy peak energy and capacity needs during high load periods, and to support the electrical grid during outages of transmission lines and other generating facilities.

PROJECT DESCRIPTION

Mike Monasmith

INTRODUCTION

The Preliminary Staff Assessment (PSA) for the Mission Rock Energy Center (Mission Rock or project) contains 23 technical analyses of potential environmental effects and engineering factors associated with the development and operation of the project. The Mission Rock Energy Center, LLC (applicant or project owner) is proposing to construct, own, and operate the electrical generating plant in Ventura County, California, west of the city of Santa Paula near State Route (SR) 126. **Project Description Figure 1** presents the project's location at a regional scale. The applicant is a wholly owned subsidiary of Calpine Corporation (Calpine). Mission Rock would be located on a 9.79acre parcel currently being used as a storage facility for recreational vehicles and boats.

As proposed, Mission Rock would be a natural gas-fired, simple-cycle combustion turbine electrical generating (CTG) facility rated at a nominal generating capacity of 275 megawatts (MW), co-located with 20 lithium-ion battery units for the storage of electricity that can deliver an additional 25 MW/100MWh (25 MW for a period of four hours). Mission Rock would also feature clutch technology that would allow the turbines to serve as synchronous condensers to provide voltage support without using natural gas once started. Temporary construction facilities would include a 2.89-acre area immediately north of the Mission Rock site for worker parking and construction laydown. **Project Description Figure 2** illustrates the architectural rendering of the power plant and battery array.

PROECT SETTING, LOCATION AND SITE DESCRIPTION

Mission Rock would be located in unincorporated Ventura County, 2 miles west of the city of Santa Paula, at 1025 Mission Rock Road. Access to the site from Santa Paula or Ventura is via SR-126, also called the Santa Paula Freeway or Orchard Farm Road (**Project Description Figure 3**). Local site access is through the South Briggs Road exit from SR-126 then to South Pinkerton Road, and Mission Rock Road. The main access to the Mission Rock site would be via Mission Rock Road. There is secondary emergency access west from Shell Road, which connects with Mission Rock Road at the gate location for the alternative site access to the project site.

The Mission Rock site is located in an industrial park, an area that is zoned General Industrial (M-3, with minimum lot size of 10,000 square feet). The Assessor's Parcel Number is 090-0-190-165. **Project Description Figure 4** and **Figure 5** show an aerial of the project site and adjacent land uses, including a close up view of the project site. Adjacent land uses include the Granite Construction Company asphaltic concrete plant and asphalt recycling facility, automobile dismantling facilities, vehicle storage for crushed cars, auto repair and salvage yards, and agricultural production.

APPLICANT'S PROJECT PURPOSE AND OBJECTIVES

As stated by the applicant, Mission Rock's primary objective is to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology, to meet the need for new local capacity in the Moorpark Subarea of the Big Creek/Ventura local reliability area of Southern California Edison's (SCE's) service territory. Operationally flexible resources are increasingly valuable to assist with the integration of intermittent renewable resources such as solar and wind facilities for grid operation to continuously balance electricity supply and demand. Additionally, peaking capacity is needed to respond to increases in the local demand for electricity that typically occur in the afternoons of summer days. Mission Rock would provide real-time energy and voltage support to the grid. Mission Rock would have the ability to start and achieve full operational capacity within 10 minutes, and would have black-start capability using the onsite batteries (starting turbines from a completely cold and idle state) without the need for a diesel-fueled emergency generator. This would be likely to significantly reduce the project's incremental air quality impact.

The same energy storage system that provides Mission Rock with black start capability would also provide an additional 25 MW/100 MW hours (MWh) or 25 MW for up to 4 hours of flexible, preferred resource capacity to the grid. The energy storage system would be used to store energy during times of over-generation, which may be caused by intermittent renewable generation. The stored energy would then be delivered back to the grid at a later time when needed, primarily after the sun's solar output declines in the late afternoon/early evening. Mission Rock would provide a resource to balance the variability of renewable resources, to satisfy peak energy and capacity needs during high load events, and to support the electrical grid during outages of transmission lines and other generating facilities. Mission Rock's objectives are consistent with this need as follows:

- Safely construct and operate a 275-MW, natural gas-fired, simple-cycle generating facility to meet SCE's growing need for local capacity due to the pending retirement of once-through cooling plants in the Moorpark Subarea of the Big Creek/Ventura local reliability area of Southern California.
- Site Mission Rock as near as possible to a SCE substation with available transmission capacity to serve the Moorpark Subarea.
- Site Mission Rock in an existing industrial area on a brownfield site, to minimize environmental impacts.

PROJECT COMPONENTS

Mission Rock would be a simple-cycle generating facility consisting of five power blocks. Each power block would contain one GE LM6000 PG natural gas-fired CTG. **Project Description Figure 6** and **Figure 7** present the general arrangement and project elevations. Mission Rock would interconnect to the grid at the SCE Santa Clara Substation through a 6.6-mile generator tie-line (or transmission line). **Project Description Figure 8** illustrates the transmission line route including linear routes for

the proposed recycled water pipeline and two alternative routes for the SCE natural gas pipeline (Route A and Route B).

The five GE LM6000 PG CTGs would be equipped with selective catalytic reduction (SCR) air emissions control equipment and associated support equipment for nitrogen oxide (NOx) and an oxidation catalyst carbon monoxide (CO) and volatile organic compound (VOC) control. Mission Rock would have a net generation capacity of 275 MW. Each CTG could generate approximately 57 MW (gross) at base load under International Standards Organization conditions. The facility is expected to have an overall annual availability of 92 to 98 percent, including scheduled and forced outages. The design of the plant would provide for operating flexibility. Each CTG is designed to start and ramp up to achieve full capacity within 10 minutes. This fast-start capability is well suited to meet the needs of the grid which is rapidly becoming increasingly dependent on intermittent renewable resources. Each CTG also provides various ancillary services, such as spinning reserve, allowing Mission Rock to readily adapt to changing conditions in the energy and ancillary services markets.

The wet surface air condenser will be a packaged unit designed to handle the cooling needs of the turbines (inlet air chilling). The unit will have the six cells, with a total circulation rate of approximately 10.675 gpm. The drift eliminator efficiency for small package units of this type ranges from 0.001 to 0.005%. The proposed unit will be designed at the efficiency level of 0.001%. The CTGs can operate at partial load as needed, while continuing to meet applicable air pollution emissions limits, down to a minimum operating load of 25 percent. Operational modes would be driven by good operating practices, market conditions, and dispatch requirements.

There are different allowable air pollution emissions limits for startup and for normal operations. The emissions of each CTG are stabilized at permitted normal operations levels within 30 minutes of startup. Hot flue gas exits the CTGs and enters the emissions control equipment. The proposed emissions limits would be met using Best Available Control Technology (BACT), which includes the use of water injection and a SCR system that uses aqueous ammonia to limit the emissions of NOx; and an oxidation catalyst that would control the emissions of CO and volatile organic compounds (VOC). Emissions would be monitored by a continuous emissions monitoring system (CEMS) before exiting the stack. Emissions of particulate matter and sulfur dioxide would be controlled by the exclusive use of pipeline quality natural gas.

Mission Rock is expected to operate only occasionally during periods of increased need on the grid, such as: times of high electrical load, during periods when intermittent renewable source generation fluctuates, when baseload plants are not operating or being brought on-line, or during emergency conditions. Although the CGT portion of the facility would be licensed and permitted to operate up to 28.5 percent a calendar year, plus 150 start and stop cycles, its actual capacity factor[1] is expected to be significantly less. In addition, having multiple turbines at the site provides a wide operating electrical

[1] The capacity factor of a power plant is the ratio of its actual output over a period of time, to its potential output if it were possible for it to operate at full nameplate capacity continuously over the same period of time. This ratio, typically expressed as a percentage, indicates a facility's level of use.

output range (13 to 275 MW), as well as shaft redundancy, meaning that if one turbine is unavailable the site could still provide an ample amount of energy.

A 25 MW/100 MWh battery energy storage system would be installed at the Mission Rock site. The system can be operated in conjunction with the thermal power plant or separately. The batteries would be lithium-ion and/or flow types. The storage system would consist of three main components: batteries, inverters, and balance of plant (BOP) (i.e., step-up transformers, site controller). Battery enclosures would minimize fire protection requirements and provide secondary containment. The applicant expects the energy storage system component of the facility to be used in part for ancillary services (regulation up and regulation down), frequency regulation, peak shaving, and energy arbitrage. The batteries would be stored in 20 onsite metal buildings that would be arranged along the south and western edges of the project footprint (**Project Description Figure 2** and **Figure 6**).

In the CTGs, combustion air flows through the filters, across inlet air chiller coils and associated air inlet ductwork, then is compressed in the gas turbine compressor section, before flowing to the CTG. Natural gas is injected along with compressed air into the combustor and then ignited. The hot combustion gases expand through the power turbine section of the CTG, causing the shaft to rotate and drive the electric generator and CTG compressor.

Thermal energy is produced in each CTG through the combustion of natural gas, which is converted into the mechanical energy required to drive the combustion turbine compressors and electric generators. The GE LM6000 PG CTG is a two-shaft/two-spool engine consisting of a compressor, a high-pressure turbine, and a low-pressure turbine. The turbine is shock-mounted and connected to a two-pole, air-cooled generator operating at 13.8 kilovolt (kV) and 60 hertz (Hz). Each CTG system consists of a stationary combustion turbine generator, supporting systems, and associated auxiliary equipment. The CTGs would be equipped with the following required accessories to provide safe and reliable operation:

- Air inlet system complete with a modular, multistage filtration system
- Weatherproof acoustic enclosures with explosion-proof lighting
- Fuel system, including an electronically controlled fuel metering valve
- Two lube oil systems: one synthetic for gas turbine one mineral for the generator
- Stainless steel lube oil reservoirs, valve trim and piping
- Oil cooling provided by an air-cooled fin-fan cooler
- Electro-hydraulic start system
- 24-volt direct current (DC) valve regulated lead acid type battery system
- Generator protective relays
- Water injection for NOx control
- Compressor wash system
- Fire detection and protection system

- Turbine/generator base plate

Major Electrical Equipment and Systems

The electric power generated by Mission Rock would be transmitted to the electrical grid, with the exception of the power required for onsite auxiliaries such as pumps, fans, gas compressors, and other parasitic loads. The integrated energy storage battery system would provide black start capability for critical loads and control systems.

Power would be generated by the five CTGs at 13.8 kV and then stepped up using three 13.8/230-kV, oil-filled generator step-up transformers, to support connection to a new, 6.6-mile electric transmission line that will enable connection to the local 230-kV network. Surge arrestors would protect the transformer from surges in the 230-kV system caused by lightning strikes or other system disturbances. The transformers would be set on a concrete foundation that would include secondary oil containment reservoirs to contain the transformer oil in the event of a leak or spill. The high-voltage side of the generator step-up transformer would be connected to a single-circuit, three-phase, 230-kV electric transmission line (this is done so voltage from the power plant can be transmitted over long distances). The project includes a 6.6 mile transmission line (generator tie-line) connecting to the Southern California Edison (SCE) Santa Clara Substation, located approximately 4.4 miles west of the power plant site, in the lower Sulphur Mountain foothills, ½-mile north of Foothill Road. The interconnecting 230-kilovolt (kV) transmission line would be supported by 36 new, steel monopole structures, ranging in height from 79.9 feet (H-frame) to 200 feet, located at appropriate intervals. The private electric transmission line would traverse across private and county owned land right-of-ways (ROWs), connecting the project to the SCE substation where voltages would be reduced, and power distributed to lower voltage circuits. The 6.6-mile transmission line would begin with one of two H-frame towers where the line would be launched out of the Mission Rock footprint (tower# 1) and through the adjoining tree row situated on the western edge of the 10-acre site. The second H-frame (tower not numbered) would be constructed for use by the transmission line before it enters the Santa Clara substation. The remaining 34 towers would be monopole design (as depicted in **Project Description Figure 9**). The height of the lowest conductor on the initial H-frame support tower (#1) is 47 feet (CEC2017d). A detailed discussion of the electric transmission system is provided in the **Transmission System Engineering** and **Land Use** sections of this staff assessment.

One common 125-volt DC power supply system consisting of one 100-percent-capacity battery bank, two 100-percent static battery chargers, a switchboard, and two or more distribution panels would be supplied for the balance of power (BOP) and essential CTG equipment. Under normal operating conditions, the battery chargers supply DC power to the DC loads. The battery chargers are fed by 480-volt alternating current (VAC) and continuously charge the individual battery banks while supplying power to the DC loads. Each CTG would be provided with its own separate battery systems and redundant chargers. Notably, this power plant battery power supply system would be separate and apart from the onsite energy storage system battery array comprising 20 lithium-ion batteries that would be charged off the grid during the day (when excess power exists from wind and solar resources) and then used to provide up to four hours of 25 MWs of electricity during peak periods of energy demand after the sun goes down.

Fuel System

The CTGs would be designed to burn only natural gas. Applicant-provided data suggests that natural gas requirement during base load operation at annual average ambient temperature would be approximately 2,780 million British thermal units per hour (MMBtu/hr) with higher heat value (HHV) basis totals for the five combined CTG units at 45,000 million dry standard cubic feet. Seasonal temperature fluctuations would not significantly influence fuel demand because the inlet combustion air temperature would be held at 50°F by inlet air chillers. Natural gas would be delivered to Mission Rock via a tap from the existing Southern California Gas Company (SoCalGas) natural gas Lines 404 and 406 via either a 2.58-mile-long pipeline (Route A) or 2.14 mile long pipeline (Route B).

For Route A, the pipeline route would extend southwest from Mission Rock parallel with the transmission and wastewater supply lines until it crosses under Todd Barranca. The pipeline would then turn north and continue along the western edge of Todd Barranca until it intersects with the Santa Paula Branch Line (also known as Southern Pacific Railroad) right-of-way. The pipeline would then continue along the railroad right-of-way southwest to the interconnection point with SoCalGas Lines 404/406.

With Route B, the natural gas pipeline would also enter the project site in the same right-of-way as the recycled water pipeline and transmission line, instead of following Shell Road to Todd Barranca. Where the transmission line turns north and departs from the recycled water pipeline, Route B would also turn north, following the generator tie-line route as far as the railroad right-of-way. Route B would then turn to the west-southwest along the railroad right-of-way to the point of interconnection with SoCalGas lines 404/406 (CH2M2017j).

The new gas supply piping would be comprised of a 16-inch-diameter pipeline. At Mission Rock, the natural gas would flow through an 8-inch turbine-meter set, gas scrubber/filtering equipment, a gas pressure-control station, electric-driven booster compressors and final fuel filters, and a fuel gas heater prior to entering the combustion turbines. A minimum floating delivery pressure of 350 pounds-per-square-inch-gauge, as measured downstream of a non-regulated meter set, would be provided by SoCalGas. Three, 100-percent-capacity, electric-driven fuel gas compressors would be provided to boost the pressure to that required by the CTGs. The gas compressors would be located outdoors and housed in an acoustical enclosure in order to reduce the compressor noise level.

Inlet Air Chiller System

As mentioned earlier, combustion air would be maintained at an optimum inlet temperature of 50°F through the use of an inlet air chiller. A wet surface air condenser will be a packaged unit designed to handle the cooling needs of the turbines (inlet air chilling). A six-cell wet surface air condenser (wet SAC) unit will have a total circulation rate of approximately 10,675 gpm (CH2M2016aa). The chiller package would be provided, sized to serve the five CTGs, and utilized throughout the year. The air chiller would cool a water/glycol mixture, which is circulated through coils in the CTG inlet air filter housing as a means of keeping temperatures within the CTG’s at a constant, optimum temperature for efficiency purposes.

Water Supply and Use

Once approved, Mission Rock would use treated recycled water supplied by the Limoneira Company via a new, 1.7-mile-long water supply pipeline that taps into an existing Limoneira Company recycled water line southwest of the project site. Potable water would be provided by either the city of Santa Paula Water Works or a vendor. Two water balance diagrams are included for review, representing two operating conditions. **Project Description Figure 10** represent annual average operation at 61°F (with five CTGs operating at 100 percent load), and **Project Description Figure 11** represents the annual maximum operation for a typical summer operation scenario at 79.2°F (also with five CTGs operating at 100 percent load).

Once approved, recycled water from the Limoneira Company would be used for service water, chiller fill and makeup, and for fire protection, in addition to general (non-potable) needs such as landscaping and hose bibs (equipment and surface washdown). Under the maximum-permitted operating scenario of 28.5 percent capacity factor at the average annual temperature design scenario, Mission Rock would use approximately 67.21 acre-feet of recycled water per year for all plant uses. A breakdown of the estimated average daily quantity of water required for operation of Mission Rock is presented in **Project Description Table 1**. The daily water requirements shown are estimated quantities based on the simple-cycle plant operating at full load. The water requirements shown are based on an ambient temperature of 61°F (approximate annual average dry bulb temperature) and 79.2°F (summer daytime temperature design case), respectively.

Project Description Table 1
Daily and Annual Water Use for Project Operations

Water Use	Gallons Per Minute		Acre-Feet Per Year
	Average Daily Use 61°F	Summer Daily Use 79.2°F	Maximum Annual Use
Process water:			
Maximum permitted scenario[a]	116	146	67.21
Expected scenario[b]	22	27	10.13
Sanitary and domestic water:			
Maximum permitted scenario[a]	0.33	0.33	0.15
Expected scenario[b]	0.33	0.33	0.15
Total usage:			
Maximum permitted scenario[a]	116.33	146.33	67.36
Expected scenario[b]	22.33	27.33	10.28

Notes: [a] Maximum permitted scenario is based on the maximum scenario of 2,500 hours per year plus 150 start and stop cycles (conservatively estimated at 30 minutes per start and 30 minutes per stop), at the annual average temperature design conditions.
[b] Expected scenario is based on the more realistic operating profile of approximately 500 hours per year, at the annual average temperature design conditions.
afy = acre-feet per year, gpm = gallons per minute
Source: CAL2015a, pg. 2-12.

A portion of the incoming recycled water would be treated by a demineralizer and then stored onsite. An 892,000-gallon demineralized water storage tank would be sufficient for approximately 32 hours of plant use. Rental demineralizer equipment including trailers or portable demineralizer skids would receive recycled water from the Limoneira Company, demineralize it, and supply it as purified water to the plant. The high quality purified, demineralized water would be used for the combustion turbine water injection for NOx reduction, online water wash of the combustion turbine compressor section, and water injection required for operation.

Potable water would be used for safety showers, eye-wash stations, drinking water, and sanitary facilities. Water provided by the city of Santa Paula Water Works via an existing 1-inch-diameter direct hookup to the facility would be used for potable outlets, safety showers, and sanitary uses. Alternatively, potable water would be trucked onsite by the applicant from a vendor in the event of an interruption in potable water from the city. A detailed description of the water supply system, treatment, and permits is provided in the **Soil and Water Resources** section of this staff assessment.

Waste Management

Waste management is the process whereby all wastes produced at Mission Rock would be properly collected, treated if necessary, and disposed of in accordance with all applicable laws, ordinances, regulations and standards (LORS). This document organizes Mission Rock's waste streams as follows: wastewater (process wastewater, sanitary wastewater, stormwater runoff), nonhazardous solid waste, and hazardous waste (both liquid and solids).

Wastewater Collection, Treatment, and Disposal

Process wastewater, principally demineralized system reject and chiller system cooling tower blowdown, would be discharged through an agreement with Patriot Environmental Services to an adjacent discharge pipe. The primary wastewater collection system would collect stormwater runoff from all of the plant equipment areas and routed to sumps and an onsite oil-water separator before discharging offsite. The secondary wastewater collection system would collect sanitary wastewater from sinks, toilets, showers, and other sanitary facilities, and routed to an onsite septic tank for discharge through removal by a licensed waste processor for offsite treatment.

Plant drains would collect area washdown, sample drains, and drainage from facility equipment areas. Water from these areas would be collected in a system of floor drains, hub drains, sumps, and piping and would be routed to the wastewater collection system. Drains that could potentially contain oil or grease would first be routed through an oil-water separator. Wastewater from infrequent combustion turbine water washes and from the fuel filtration skid(s) would be collected in holding tanks or sumps and would be discharged into the industrial wastewater effluent pipe to Patriot Environmental Services. This component of water wastewater management is discussed in more detail in the **Soil and Water Resources** section of this staff assessment.

Nonhazardous Solid Wastes

Mission Rock would produce construction, operation, and maintenance nonhazardous solid wastes typical of power generation operations. Construction wastes generally include soil, scrap wood, excess concrete, empty containers, scrap metal, and insulation. Generation plant wastes include oily rags, scrap metal and plastic, insulation material, defective or broken electrical materials, empty containers, and other solid wastes, including the typical refuse generated by workers. As the facility is constructed, metal, wood, sheetrock, rigid plastic, and other construction materials can be recovered and made into recycled construction material. Solid wastes would be trucked offsite for recycling or for disposal at a local facility by a licensed waste disposal company. Management of solid waste is discussed in more detail in the **Waste Management** section of this staff assessment.

Hazardous Materials and Wastes

Project hazardous and nonhazardous wastes would be taken to landfills in southern and central California as detailed in the **Waste Management** section of this staff assessment. A variety of chemicals would be stored and used during the construction and operation of Mission Rock. The storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations, or standards (LORS). Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in storage tanks, and most other chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks and spills. Concrete containment pits and drain piping design would allow a full-tank capacity spill without overflowing the containment area. Please review the **Hazardous Materials Management** section of this staff assessment for more details.

For multiple tanks located within the same containment area, the capacity of the largest single tank would determine the volume of the containment area and drain piping. Drain piping for reactive chemicals would be trapped and isolated from other drains to eliminate noxious or toxic vapors. The aqueous ammonia storage and delivery area would have spill containment and ammonia vapor detection equipment. Safety showers and eyewash stations would be provided adjacent to chemical use and storage areas. Plant personnel would use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel would be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. A list of the chemicals anticipated to be used at Mission Rock and their storage locations are provided in the **Hazardous Materials Management** section of this staff assessment. This list identifies each chemical by type, intended use, and estimated quantity to be stored onsite.

Several methods would be used to properly manage and dispose of hazardous wastes generated by Mission Rock. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters would be disposed of in a Class I landfill (Class I sites in Los Angeles and Ventura Counties may accept hazardous and nonhazardous wastes). Spent Selective Catalytic Reducers and oxidation catalysts would be recycled by the supplier or disposed of in accordance with

pertinent regulatory requirements. Workers would be trained to handle hazardous wastes generated at the site. These wastes, which are subject to high metal concentrations, would be temporarily stored onsite in portable tanks or sumps, and disposed of offsite by the chemical cleaning contractor in accordance with applicable regulatory requirements. Management of all hazardous wastes is discussed in more detail in the **Waste Management** section of this staff assessment.

Emission Control and Monitoring

Air emissions from the combustion of natural gas in the CTGs would be controlled to the standards of best available control technology, (BACT) as determined by Ventura County Air Pollution Control District. To ensure that the systems perform correctly, continuous emissions monitoring for NOx and CO would be required. The **Air Quality** section of this staff assessment includes additional information on emission controls and monitoring requirements.

The CTGs selected for Mission Rock would use purified water injection and SCR to control emissions of NOx. One-hour NOx emissions would be controlled at the stack to 2.5 parts per million by volume, dry basis (ppmvd), corrected to 15 percent oxygen. The SCR process would use 19.5 percent aqueous ammonia. Ammonia slip, or the concentration of unreacted ammonia in the stack exhaust, would be limited to 5 ppmvd at 15 percent oxygen. The project would use an ammonia delivery system which consists of a 12,000-gallon ammonia tank, spill containment basin, and refilling station with a spill containment basin and sump. CO and VOC emissions would be controlled by means of an oxidation catalyst. The oxidation catalyst would limit 1-hour stack CO emissions to 4 ppmvd at 15 percent oxygen. VOC emissions would also be limited to 1 ppmvd at 15 percent oxygen. Particulate emissions would be controlled by the exclusive use of pipeline-quality natural gas (low in sulfur), and the use of high-efficiency air inlet filtration.

For each CTG, a separate continuous emission monitoring systems (CEMS) would sample, analyze, and record fuel gas flow rate, oxygen, NOx and CO concentration levels in the stack near the exit, and report concentrations calculated at the percentage of oxygen. The CEMS sensors would transmit data to a data acquisition system (DAS) that would store the data and generate emission reports in accordance with permit requirements. The DAS would also include alarm features that send signals to the plant survey control station (SCS) when the emissions approach or exceed pre-selected allowable emissions limits.

Fire Protection

The Mission Rock fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The system would include a fire protection water system, carbon dioxide (CO2) fire suppression systems for the CTGs, and portable fire extinguishers. A fire loop, consisting of a water supply storage tank, pumps, and piping, would be designed to protect Mission Rock, and the system would be designed in accordance with:

- Federal, state and local fire codes, occupational health and safety regulations, and other jurisdictional requirements
- California Building Code (CBC)
- National Fire Protection Association (NFPA) standard practices

The fire loop water supply and pumping system provide fire-fighting-water to yard hydrants, hose stations, and water spray and sprinkler systems. The system would be capable of supplying maximum water demand for any automatic sprinkler system, plus water for fire hydrants and hose stations. Hydraulic calculations would be performed to demonstrate that the fire protection loop has sufficient capacity to provide all the required fire-fighting-water for the power plant. A plant firewater loop, designed and installed in accordance with NFPA 24, would be provided to reach all parts of the facility. Both the fire hydrants and the fixed suppression systems would be supplied from the firewater loop. The firewater systems would have sectionalizing valves to allow a failure in any part of the system to be isolated, so that the remainder of the system can continue to function properly. The Mission Rock fire protection system would include a backup diesel fire pump, rated at 200 horsepower (hp) or less. Fixed fire suppression systems would be installed at determined fire risk areas, such as at the gas compressors and turbine lube oil equipment. Separation criteria, as defined by NFPA and the CBC, would be used to determine spacing of the transformers, ammonia storage, and other areas that pose a fire risk or health hazard, such as natural gas-fired equipment, lube oil and hydraulic oil piping and containment, ammonia storage and unloading equipment, and the fire pump skid.

Sprinkler systems would also be installed in the control room building, the warehouse/maintenance building, and fire pump enclosure (as required by NFPA), as well as anywhere required by local code requirements. The CO2 fire-suppression system provided for each CTG will include a CO2 storage tank, CO2 piping and nozzles, fire detection sensors, and a control system. The control system would automatically shut down the affected CTG turbines, turn off ventilation, close ventilation openings, and release CO2 upon detection of a fire. The CO2 fire suppression systems would cover the turbine enclosure and accessory equipment enclosure of each CTG.

Portable CO2 and dry chemical extinguishers would be located throughout the power plant site, including switchgear rooms, with size, rating, and spacing in accordance with NFPA 10. The **Worker Safety/Fire Protection** section of this document includes additional information for fire and explosion risk and local fire protection capability.

Plant Auxiliaries

The lighting system provides personnel with illumination for operation under normal conditions and for egress or manual equipment operations under emergency conditions. The lighting system would be designed in accordance with the Illuminating Engineering Society of North America and calculated average illumination levels with a 0.8 maintenance factor. The lighting plan would include the following components:

- Photo cells to control outdoor lighting
- Frequently switched indoor lighting (such as office and maintenance areas) would be controlled by wall-mounted switches. Infrequently switched indoor lighting (such as in equipment buildings) would be controlled by panel board circuit breakers.
- Self-contained battery-backed emergency lighting and exit signs would be furnished to provide safe personnel egress from buildings during a total loss of plant power. Emergency lighting would be designed to maintain the necessary illumination for a minimum of 90 minutes.

The Mission Rock electrical system is susceptible to ground faults, lightning, and switching surges that can constitute a hazard to site personnel and electrical equipment. The Mission Rock grounding system provides a path to permit the dissipation of hazardous energy created by these events. Site ground resistivity readings would be used to determine the quantity of grounding electrodes and grid spacing to ensure safe step and touch potentials under severe fault conditions. Bare copper conductors would be installed below-grade based on the calculated grid spacing. Each junction of the grid would be electrically bonded together. All building steel *and* non-energized metallic parts of electrical equipment would be electrically bonded to the ground grid.

The survey control station (SCS) provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems. The SCS would provide the following functions:

- Controlling the CTGs and other systems in a coordinated manner
- Controlling the BOP systems in response to plant demands
- Monitoring controlled plant equipment and process parameters and delivery of this information to plant operators (via logs, video monitors)
- Providing alarms for out-of-limit parameters or parameter trends, displaying on alarm video monitors(s), and recording on an alarm log printer
- Providing storage and retrieval of historical data
    - Interface with the control systems furnished by the CTG supplier to provide remote control capabilities. The system would be designed with sufficient redundancy to preclude a single device failure from significantly affecting overall plant control and operation. The design would also ensure critical control and safety systems have redundancy of control and uninterruptable power sources. As part of the quality control program, daily operator logs would be available for review to determine the status of the operating equipment.

Project Construction

If approved, construction of Mission Rock would occur over a period of 23 months, beginning in November 2018 and completing by September 2020 (CAL2015a). Peak construction traffic would be during the 6th month of construction (April of 2019). Construction would generally occur between 7 AM and 7 PM on weekdays and 8 AM and 5 PM on Saturdays, with possible schedule adjustments during the summer months

and to complete critical construction activities or make up for deficiencies in the project schedule. During the start-up and testing phase of the project, some construction activities (e.g., concrete pours, testing of new equipment) may occur 24 hours a day, 7 days a week. Major milestones are listed in **Project Description Table 2**.

Project Description Table 2
Major Project Milestones

Activity	Date
Begin Construction	November 2018
Startup and Test	April 2020
Commercial Operation	September 2020

Source: CAL2015a, pg. 2-22.

During construction there would be an average and peak workforce of 93 and 146 individuals, respectively. The workforce would comprise construction craft people, supervisory, support, and construction management personnel. The estimated indirect and induced employment resulting from project construction within Ventura County would be 35 and 97 jobs, respectively. Indirect jobs are jobs created by the project as it purchases supplies or other items for its business. An induced job is a job that is created by employees of the project. For more detailed information on payroll and economic impacts estimated to occur as the result of Mission Rock, please see the **Socioeconomics** section of this document.

Typically, noisy construction would be scheduled to occur only between 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 5 p.m. on Saturdays. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities (e.g., pouring concrete at night during hot weather, working around time-critical shutdowns and constraints). During the startup phase of the project, some activities would continue 24 hours per day, 7 days per week. Please review the **Noise and Vibration** section of this staff assessment for additional information and analysis.

Mission Rock's peak construction traffic level is expected to occur in month 6. Traffic levels include plant construction worker activity and an average of delivery/haul truck trips per day, including 61 soil import trips and 24 other delivery truck trips associated with site civil improvements. Site civil improvements include the importation of fill soil for purposes of raising the Mission Rock foundation footprint 1 foot above the 100 year flood zone. **Project Description Figure 12** presents the FEMA Floodplains in the project area. The soil import process itself is expected to occur at a consistent rate over the 5-month soil import duration (61 loads per day, 22 days per month between months 1 and 6) when the applicant would raise the project site as much as 10 feet in some areas to account for a 100-year flood event (the Site Grading Plan, **Project Description Figure 13**, provides estimates of how much elevation increases would occur at various locations on the footprint). The maximum daily peak for soil import truck trips is not expected to exceed 100 loads per day. The applicant estimates the average and peak construction traffic during the 23-month construction/commissioning period as 92 and 146, respectively. Please review the **Traffic and Transportation** section of this staff assessment for more information and analysis on traffic impacts resulting from the Mission Rock project.

Generating Facility Operation

Mission Rock would have an operations and maintenance (O&M) manager, business supervisor, and instrument technician working a standard 5-day, 8-hours per day work week. Additionally, the facility would be staffed by an operator on a 24-hour basis, using rotating 12-hour shifts. Up to 15 full-time employees would be hired for Mission Rock operations. The project would have an average of 8 workers at the plant during the weekdays and an average of two workers at the plant during weekends (CEC2017d). Mission Rock is expected to have an annual plant availability of 92 to 98 percent, including scheduled outages for maintenance and forced outages. Mission Rock expects to operate as a peaker unit, with some amount of load following and cycling. It is expected that the primary purpose of Mission Rock would be to provide generation capacity during peak season (summer) high demand periods (typically late afternoon/early evening periods of the day). The facility is expected to be operated during these high demand times to supplement base-load and renewable generation capacity. The exact operational profile of the plant, however, would be determined by the California Independent System Operator (California ISO) and cannot be defined in detail at this time since operation of the facility depends on the variable demand in the Mission Rock service area. The facility may be operated in one or all of the following modes:

- **Load Following**. The facility would be operated at loads that may vary between maximum continuous output (all of the CTGs operating at base load) and minimum load (one CTG operating as low as 25-percent load) to meet electrical demand.
- **Daily Cycling**. During high demand periods, the facility may be operated in daily cycling mode, where the plant is operated at loads up to maximum continuous output during the day and totally shut down at night or on weekends. This mode of operation may occur either with daily nighttime shutdowns or with weekend shutdowns depending on electrical demand, hydroelectric power availability, and other issues. The facility may cycle more than once a day to accommodate the grid's voltage support needs.
- **Storage System.** The energy storage system would be dispatched by the need of California ISO or Southern California Edison, and could be charged/discharged daily, potentially multiple times, and always available for black start capability and other ancillary services as demanded.
- **Synchronous Condenser.** Any one or multiple generators could be used in synchronous condenser mode when the turbines are not running. To operate in this mode, the turbines would spin the generator to operating speed, then a clutch would disengage the turbine from the generator and the turbine could then be shutdown. During this mode, the generator would be held at synchronous speed by consuming small quantities of electricity from the grid and the generator voltage and voltage-ampere reactives would be adjusted as the grid requires, up to the limit of the generator.

Facility Availability

Mission Rock would be designed to operate between about 5 percent (25 percent of full load of one of the plant's five GE turbines) and 100 percent of base load, or nominally

14 MW to 255 MW (with an additional 25 MW of battery production capacity available for up to 4 hours as well). This capacity would support California ISO dispatch service in response to customer demands for electricity. The project would be designed for an operating life of 35 years. Reliability and availability projections are based on this operating life span. Operation and maintenance procedures would be consistent with industry standard practices to maintain the useful life of plant components.

The equivalent energy availability factor (EAF) is the metric by which a power plant is able to produce electricity over a certain period. EAF is a weighted average of the percent of energy production capacity achievable at a project, and differs from the "availability of a unit," which is the percent of time that one of a project's units is available for operation, whether at full load, partial load, or standby. The following subsections identify equipment redundancy as it applies to project availability. A summary of equipment redundancy is shown in **Project Description Table 3** below:

Project Description Table 3
Major Equipment Redundancy

Description	Number of Units
Simple-cycle CTGs	5 - each capable of independent operation
Batteries	20 containers of batteries, 5 inverters, and 2 medium-voltage transformers
Fuel gas booster compressors	3 – 100 percent capacity
Demineralizer system	2 - 100 percent capacity
Demineralized water forwarding pumps	2 - 100 percent
Recycled water forwarding pumps	3 - 50 percent
Inlet air chiller	2 - 50 percent capacity
Primary chilled water pumps	4 - 50 percent (2 x 50 per chiller package)
Chiller condensing cooling water pumps	4 - 50 percent (2 x 50 per chiller package)
Ammonia transfer pumps	2 -100 percent
Service water supply pumps	2 - 50 percent
Air compressors	2 -100 percent
Fire water pump	1 -100 percent

Source: CAL2015a, pg. 2-25.

Quality Control

The objective of the Quality Control Program is to ensure that all systems and components have the appropriate quality measures applied; whether during design, procurement, fabrication, construction, or operation. The goal of the quality control program is to achieve the desired levels of safety, reliability, availability, operability, constructability, and maintainability for the generation of electricity.

The required quality assurance for a system is obtained by applying controls to various activities, according to the activity being performed. For example, the appropriate controls for design work are checking and reviewing, and the appropriate controls for manufacturing and construction are inspection and testing. Appropriate controls would be applied to each of the various activities for the Mission Rock facility.

During construction, field activities are accomplished during the last four stages of the project: receipt inspection, construction/installation, system/component testing, and plant operations. The construction contractor would be contractually responsible for performing the work in accordance with the quality requirements specified by contract and in the Energy Commission's license conditions and certification. A plant operation and maintenance program, typical of a project this size, would be implemented by Mission Rock with oversight by the Energy Commission to control operation and maintenance quality. The complete compliance program for this project can be reviewed in the **Compliance Conditions and Compliance Monitoring Plan** section of this staff assessment, and would be further refined and implemented post-certification.

Thermal Efficiency

The basis of Mission Rock operations would be system dispatch within California's power generation and transmission system as determined by the California ISO. It is expected that Mission Rock would be primarily operated in load following or cycling service. The number of startup and shutdown cycles is expected to range between zero and 150 per year per CTG. Plant fuel consumption would depend on the operating profile of the power plant. It is estimated that the range of fuel consumed by the power plant would be from a minimum of near zero British thermal units (Btu) per hour to a maximum of approximately 2,780 MMBtu per hour (higher heating value or HHV basis) at 100-percent load and average ambient conditions. This level of efficiency is achieved when a facility is base-loaded at annual average ambient conditions. Other types of operations, particularly those at less than full gas turbine output, would result in lower efficiencies. The maximum thermal efficiency that can be expected from a natural gas-fired simple-cycle plant using GE LM6000 combustion turbine units is approximately 40 percent on a HHV basis, and 55 to 56 percent on a lower heating value basis. The net annual electrical production from Mission Rock cannot be accurately forecasted at the present time due to uncertainties in the system load dispatching model and the associated policies. Nonetheless, the maximum annual generation possible from the CTG portion of the facility is estimated to be approximately 711.5 gigawatt hours per year, based on a permitted operating limitation of a combined total of 12,483 CTG operating hours per year.

Facility Closure

Mission Rock closure can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, with an intention to restart in the future. Causes for temporary closure include a disruption in the supply of natural gas or damage to the plant from earthquake, fire, storm, or other natural acts. Permanent closure is defined as a cessation in operations with no intent to restart operations.

For a temporary closure where there is no release of hazardous materials, Mission Rock would maintain security of Mission Rock facilities and would notify the Energy Commission and other responsible agencies, as required by law. Where the temporary closure includes damage to the facility, and there is a release or threatened release of regulated substances or other hazardous materials into the environment, procedures would be followed as set forth in a Risk Management Plan and the Hazardous Materials

Business Plan (HMBP) to be developed as described in the **Hazardous Materials Management** section of this staff assessment. The HMBP would include methods to control releases, notification of applicable authorities and the public, emergency response, and training for plant personnel in responding to and controlling releases of hazardous materials.

If the facility is permanently closed, the closure procedure would follow a plan that would be developed as described in the **Compliance Conditions and Compliance Monitoring Plan** section of this staff assessment.

REFERENCES

CAL2015a – Calpine Company (TN207151-1). Application for Certification, Mission Rock Energy Center, Vol I. December 30, 2015.

CEC2016d — California Energy Commission (TN 216945). Record of Conversation; ROC w/ Doug Davy (CH2MHill) regarding average number of operations employees and lowest conductor height on H-poles. April 7, 2017

CH2M2016aa – CH2M Hill (TN210540-2). Mission Rock Energy Center Minor Revisions to the Air Quality, Public Health and Biological Resources Analyses. February 26, 2016

CH2M2017j – CH2M Hill (TN216621). Data Responses to Data Requests Set 2 (Nos. 132 and 133) and Set 3 (Nos. 154-158. March 20, 2017

Project Description Figures to be Docketed at a Later Date

Environmental Assessment

AIR QUALITY

Joseph Hughes, P.E.

SUMMARY OF CONCLUSIONS

Mission Rock Energy Center (Mission Rock) is proposed as five simple-cycle combustion turbine generators (CTGs), each with a clutch that would enable the facility to provide transmission line support as a synchronous condenser. The facility would also host onsite batteries capable of producing 25 megawatts (MW) for four hours, or 100 megawatt-hours (MWh). The analysis below focuses on the CTGs, wet surface air cooler (wet SAC) and the onsite diesel-fueled fire pump engine, as these are the only sources of onsite air pollution.

Air quality issues related to the project are addressed through staff's analysis, additional staff recommended conditions of certification, and in the Ventura County Air Pollution Control District's (VCAPCD or District) Preliminary Determination of Compliance (PDOC) for the project. The applicant has not yet identified the specific emissions reduction credits (ERCs or offsets) they would use to comply with the laws, ordinances, regulations, and standards (LORS) requirements of the VCAPCD's rules and regulations. In its PDOC, the District has required the applicant to identify the ERCs that would be used to satisfy the emission offset requirements before the District will issue the Final Determination of Compliance (FDOC).

Furthermore, at the time of publication, the applicant, Mission Rock Energy Center, LLC (Mission Rock, LLC), has not identified mitigation that would be required by California Environmental Quality Act (CEQA) for air quality purposes. Similar to previous projects, staff recommends that the Energy Commission require CEQA mitigation of all non-attainment criteria pollutants and non-attainment criteria pollutant precursor emissions. For this project, as described more fully below, the area is non-attainment for ozone and respirable particulate matter (PM10). Precursors for ozone are oxides of nitrogen (NOx) and volatile organic compounds (VOCs). Precursors for PM10 are VOCs, NOx and sulfur dioxide (SO_2). Staff continues to work with the applicant and VCAPCD to identify, quantify, and enforce specific mitigation measures. These mitigation measures will need to be established before publication of the Final Staff Assessment (FSA).

As part of this analysis, staff considered the environmental justice (EJ) population, local farm workers, and recreational users that might be exposed to the plume from the Mission Rock stacks. Staff has assessed the potential for localized impacts and regional impacts from the project's emissions during both construction and operation. Full implementation of the recommended air quality conditions of certification would generally result in mitigation sufficient to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level, including impacts to the EJ population, farm workers and recreational users within a six-mile radius of the project site. However, these conditions of certification have not yet been completed as the applicant has not yet identified specific mitigation. Assuming adequate mitigation would be implemented prior to operation, air quality impacts to the EJ population, farm workers and recreational users would be less than significant. Nonetheless, until the air quality

impacts are fully mitigated, the project's air quality impacts on the EJ population and whether these impacts would be disproportionate to these populations cannot be determined.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in **Air Quality Appendix AIR-1**. Mission Rock would replace less efficient, existing facilities with a modern, flexible, dispatchable, lower emission of carbon dioxide per megawatt hour (CO_2/MWh) facility. The CTGs would emit approximately 0.540 metric tonnes of carbon dioxide per net megawatt hour (MTCO2/MWh) while the associated batteries would cause CO_2 emissions only when recharged by a fossil fuel facility; however, it is not possible to determine whether a fossil-fueled facility would be used to recharge the batteriesy, or a non-fossil fuel facility would be used.

The CTG portion of the facility would emit over 25,000 metric tonnes of carbon dioxide equivalent (MTCO2E) emissions and therefore it would be subject to mandatory state and federal GHG reporting requirements. The project, as a peaking facility with an enforceable operating limit of less than a 60 percent capacity factor, is not subject to the requirements of Senate Bill 1368 (Perata, Chapter 598, Statutes of 2006), the state's Emission Performance Standard.

If built, Mission Rock would be required to participate in California's greenhouse gas cap-and-trade program. This cap-and-trade program is part of a broad effort by the State of California to reduce GHG emissions as required by Assembly Bill 32 (Núñez, Chapter 488, Statutes of 2006) (AB 32), which is implemented by the California Air Resources Board (ARB). Market participants, such as Mission Rock, would be required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Thus, Mission Rock, as a GHG cap-and-trade participant, would be consistent with California's landmark AB 32 program, which is a statewide program coordinated with a region-wide Western Climate Initiative program to reduce California's GHG emissions to 1990 levels by 2020. This program has been extended to at least 2030 by California Code of Regulations, Appendix E, Title 17, effective October 1, 2017.

INTRODUCTION

This analysis evaluates the expected air quality impacts of emissions due to the construction and operation of the proposed Mission Rock, which would be located in an unincorporated area of Ventura County, west of the city of Santa Paula, at 1025 Mission Rock Road. The Mission Rock site is a 9.79-acre parcel that is currently used for recreational vehicle and boat storage and is covered in asphalt concrete.

The analysis in this section focuses on the impacts of the proposed project's criteria air pollutant emissions, while the climate change/greenhouse gases emissions impact analysis is provided in **Appendix AIR-1**, and the air toxics emissions health impacts are analyzed separately in the **Public Health** section. Criteria air pollutants are defined as

those air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health. The criteria pollutants analyzed are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), respirable particulate matter (PM10), and fine particulate matter (PM2.5). In addition, emissions of volatile organic compounds (VOCs) (also called reactive organic compounds [ROCs]) are analyzed because they are precursors to both O_3 and particulate matter. Because NO_2 and SO_2 readily react in the atmosphere to form other oxides of nitrogen and sulfur respectively, the terms nitrogen oxides (NOx) and sulfur oxides (SOx) are also used when discussing these two pollutants.

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

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

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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

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

Applicable LORS	Description	Mission Rock Consistency
Federal		
Title 40 CFR Part 51 (New Source Review)	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and mitigation measures in the form of emissions reduction credits (ERCs) or offsets.	**Consistent:** The VCAPCD's PDOC is being issued pursuant to VCAPCD Rule 26.9, New Source Review - Power Plants. The PDOC contains BACT and offset requirements. The conditions of certification contained in this PSA ensure compliance with BACT and requires the applicant to identify the ERCs that would be used to satisfy the emission offset requirements before the District will issue the Final Determination of Compliance (FDOC).

Applicable LORS	Description	Mission Rock Consistency
Title 40 CFR Part 52 (Prevention of Significant Deterioration Program)	Prevention of Significant Deterioration (PSD) requires major sources or major modifications to major sources to obtain permits for attainment pollutants.	**Consistent:** Mission Rock does not trigger a major source or major modification analysis under this rule.
Title 40 CFR 60, Subpart IIII	New Source Performance Standard for Stationary Compression Ignition Internal Combustion Engines. Establishes emission and operational standards for compression ignition internal combustion engines, including emergency generators and fire water pump engines.	**Consistent:** Conditions of certification **AQ-62** though **AQ-71** contain requirements to ensure compliance with the applicable portions of this subpart.
Title 40 CFR Part 60, Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)	New Source Performance Standard for Stationary Combustion Turbines requires these turbines to meet NOx and SO_2 emission limit requirements. Specific requirements are discussed in more detail in the Compliance with LORS section below.	**Consistent:** Compliance with the VCAPCD New Source Review (NSR) Best Available Control Technology (BACT) requirements will ensure compliance with Subpart KKKK.
Title 40 CFR Part 60, Subpart TTTT (Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units)	This rule requires the turbines to meet carbon dioxide (CO_2) emission standards for stationary combustion turbines for newly constructed, modified, and reconstructed fossil fuel-fired electricity utility generating units (EGUs).	**Consistent:** Condition of certification **AQ-61** contains requirements to ensure compliance with the CO_2 emission standards for stationary combustion turbines.
Title 40 CFR Part 64 (Compliance Assurance Monitoring [CAM])	The Compliance Assurance Monitoring (CAM) regulation applies to emission units at a major stationary source that is required to obtain a Title V permit, which use control equipment to achieve a specified emission limit. The section is intended to provide "reasonable assurance" that the control systems are operating properly to maintain compliance with the emission limits. CAM is applicable to the turbine because the potential to emit for the stationary source exceeds the major source thresholds (25 tons per year for ROC or NOx, and 100 tons per year for PM10/PM2.5, SOx, or CO).	**Consistent:** The turbine will have a continuous emissions monitor (CEM) installed which will comply with this requirement.
40 CFR Part 70	Title V: Federal permit. Title V requires the facility owner to submit a Part 70 permit application to the VCAPCD prior to operating the new turbines and emergency fire pump engine.	**Consistent:** Condition of certification **AQ-1** contains requirements to ensure compliance with Title V federal permit requirements.
40 CFR Part 72	A Title IV Acid Rain permit is required for the proposed turbines because they are new fossil fuel fired combustion devices used to generate electricity for sale with an electrical output of greater than 25 MW.	**Consistent:** Condition of certification **AQ-1** contains requirements to ensure compliance with Title IV federal permit requirements.

State		
Health and Safety Code (HSC) section 40910-40930	Permitting of a new source needs to be consistent with regional air quality management plans approved by the Air Resources Board (ARB).	**Consistent:** The VCAPCD New Source Review (NSR) program ensures compliance with regional air quality management plans.
HSC section 41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.	**Consistent:** The conditions of certification contained in this PSA ensure compliance with this nuisance regulation.
California Public Resources Code §25523(a); 2300-2309:CEC & ARB Memorandum of Understanding	Requires that an Energy Commission decision on AFC includes requirements to assure protection of environmental quality consistent with Air Resources Board (ARB) programs.	**Consistent:** The conditions of certification contained in this PSA include requirements to ensure protection of environmental quality. This assumes that the facility's emissions are fully mitigated before the Energy Commission would render a decision.
Title 13 California Code of Regulations, §2449	In-Use Off-road Diesel Vehicle Regulation. Imposes idling limits of five minutes, requires a plan for emissions reductions for medium to large fleets, requires all vehicles with engines greater than 25 horsepower (HP) to be reported to the California Air Resources Board (ARB) and labeled, and restricts adding older vehicles into fleets.	**Consistent:** Condition of certification **AQ-SC5** requires that all off-road vehicles with compression ignition engines shall comply with the California Air Resources Board's (ARB's) Regulation for In-Use Off-Road Diesel Fleets.
Title 17, California Code of Regulations, §93115 (Airborne Toxic Control Measure [ATCM] for Stationary Compression Ignition Engines)	Limits types of fuels allowed, establishes maximum emission rates and establishes recordkeeping requirements for stationary compression ignition engines, including diesel-fueled emergency generator and fire water pump engines.	**Consistent:** Conditions of certification **AQ-62** though **AQ-71** contain requirements to ensure compliance with the applicable portions of this ATCM.
Local – Ventura County Air Pollution Control District (VCAPCD) Rule and Regulations		
Rule 26.2 - New Source Review – Requirements	The New Source Review (NSR) requirements include ensuring the emissions units are equipped with the current Best Available Control Technology (BACT), requiring emissions offsets for pollutants that exceed specified amounts, and ensuring the units would not cause a violation of any ambient air quality standard.	**Consistent:** Condition of certification **AQ-29** ensures that the turbines would meet the BACT emission limits. **AQ-49** requires the facility owner to submit design parameters and details of the SCR and oxidation catalyst emission control systems for each CTG including control efficiencies. The District's PDOC requires the owner to identify necessary offsets prior to the issuance of the Final Determination of Compliance (FDOC) and **AQ-2** requires the offsets to be surrendered prior to operation of the new turbines.

Applicable LORS	Description	Mission Rock Consistency
Rule 26.6 - New Source Review – Calculations	This rule specifies the provisions by which emission increases, emission reductions, and profile checks for offsets shall be calculated.	**Consistent:** The district's PDOC contains the emissions increase and emission reductions calculations consistent with Rule 26.6.
Rule 26.7 - New Source Review - Notification	This rule specifies the cases in which notification shall be provided of the Air Pollution Control Officer's preliminary decision to grant an Authority to Construct, or issue a Certificate of Emission Reduction Credit. In addition, this rule specifies the process by which such notification shall be made.	**Consistent:** The district will publish the notification in a newspaper of general circulation in Ventura County. The notice period will provide at least 30 days for the public to submit written comments regarding the decision. The VCAPCD will consider all comments made during the comment period and will provide written notification to any person or agency which submitted comments during the comment period.
Rule 26.9 - New Source Review - Power Plants	This Rule shall apply to all power plants proposed to be constructed in Ventura County and for which an Application for Certification (AFC) has been accepted by the California Energy Commission. Upon receipt of an AFC for a power plant, the APCO shall conduct a Determination of Compliance review.	**Consistent:** The VCAPCD conducted a Determination of Compliance review as required by Rule 26.9. A public notice and comment period will be conducted as required by Rule 26.7. Compliance with Rule 26.9 is confirmed through the district's PDOC.
Rule 26.11 - New Source Review – ERC Evaluation at Time of Use	This rule provides for the evaluation by the District of emission reduction credits for reactive organic compounds (ROC) and nitrogen oxides (NOx) at the time that an Authority to Construct (in this case a Determination of Compliance) is issued, and for the creation and implementation of an annual equivalency demonstration program.	**Consistent:** Pursuant to Rule 26.2.B.2.d and Rule 26.11.C.6 these NOx offsets are not required to be surplus at the time of use since the most recent report of the Rule 26.11 Annual Equivalency Demonstration Program, dated April 1, 2017, shows a positive balance for NOx emissions.
Rule 26.13 - New Source Review - Prevention of Significant Deterioration (PSD)	The prevention of significant deterioration (PSD) program is a construction permitting program for new major facilities and major modifications to existing major facilities that emit either criteria or greenhouse gas pollutants located in areas classified for an air pollutant as either attainment or unclassifiable.	**Consistent:** The potential to emit for the project does not exceed any PSD major source threshold. Therefore, Rule 26.13 is not applicable and no further PSD analysis is required.

Applicable LORS	Description	Mission Rock Consistency
Rule 29 – Conditions on Permits	The Air Pollution Control Officer (APCO) shall apply any reasonable conditions to an Authority to Construct or a Permit to Operate which are necessary to assure or demonstrate that a stationary source and all emissions units at the stationary source will operate in compliance with applicable state and federal emission standards and with these rules, including permit conditions required by Rule 26, New Source Review.	**Consistent:** This PSA and the district's PDOC contain conditions that both assure compliance with all applicable federal, state and Ventura County APCD rules and limit the stationary source permitted emissions in the units of tons per year and pounds per hour.
Rule 33.5 – Part 70 Permits – Timeframes for Applications, Review and Issuance	Facilities that have a potential to emit that equals or exceeds the federal major source thresholds are subject to the requirements of Part 70 Permits (commonly called Title V sources) and must submit timely applications to apply for their Part 70 Permit.	**Consistent:** Condition of Certification **AQ-1** requires Mission Rock to submit a Part 70 permit application prior to operation of the new turbines and emergency fire pump engine.
Rule 34 – Acid Deposition Control	This rule applies to any acid rain source, as defined in Title IV of the 1990 Federal Clean Air Act Amendments. A Title IV Acid Rain permit is required for the proposed turbines because they are new fossil fuel fired combustion devices used to generate electricity for sale with an electrical output of greater than 25 MW.	**Consistent:** Condition of Certification **AQ-1** requires Mission Rock to submit a Part 70 permit application prior to operation of the new turbines and emergency fire pump engine.
Rule 50 – Opacity	Rule 50 limits visible emissions to opacity of less than 20 percent (Ringelmann No. 1).	**Consistent:** Visible emissions are not expected under normal operation from the turbines, emergency diesel fire pump engine, or ammonia tank making the facility consistent with this rule.
Rule 51 - Nuisance	Rule 51 requires that a person not 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 cause, or have a natural tendency to cause injury or damage to business or property.	**Consistent:** The new equipment, including the turbines, emergency diesel fire pump engine, and ammonia tank, are not expected to create nuisance problems, such as smoke or odors.
Rule 54 - Sulfur Compounds	Rule 54 requires compliance with sulfur dioxide (SO_2) emission limits of 300 ppmv and compliance with ground level concentration limits of SO_2 (0.25 ppmv averaged over 1 hour, 0.04 ppmv averaged over 24 hours, and 0.075 ppmv 1-hour average design value).	**Consistent:** The combustion of PUC natural gas results in compliance with the 300 ppmv emission limit. The district's modeling analysis showed that the facility impacts are expected to be less than the respective standards. Therefore, the facility is expected to comply with this rule.

Applicable LORS	Description	Mission Rock Consistency
Rule 55 – Fugitive Dust	The provisions of this rule shall apply to any operation, disturbed surface area, or man-made condition capable of generating fugitive dust, including bulk material handling, earth-moving, construction, demolition, storage piles, unpaved roads, track-out, or off-field agricultural operations. This rule places limits on visible dust, opacity, and track out from activities subject to this rule.	**Consistent:** Conditions of certification **AQ-SC2**, **AQ-SC3** and **AQ-SC4** ensure compliance with this rule.
Rule 57.1 - Particulate Matter Emissions From Fuel Burning Equipment	The rule requires that particulate matter emissions from the turbine not exceed 0.12 pounds per million British thermal units (BTU) of fuel input.	**Consistent:** Conditions of certification **AQ-27**, **AQ-28**, and **AQ-29** limit particulate matter emissions to 2.0 pounds per hour. With a turbine maximum fuel input rate of 566.2 MMBTU/Hr, the particulate matter emissions are 0.004 lb per MMBTU. Therefore, compliance with the rule is expected.
Rule 64 - Sulfur Content of Fuels	Rule 64.B.1 prohibits the combustion of gaseous fuels that contain sulfur compounds in excess of 50 grains per 100 cubic feet (788 ppmv), calculated as hydrogen sulfide at standard conditions. Rule 64.B.2 prohibits the combustion of liquid fuels that have sulfur content in excess of 0.5 percent by weight.	**Consistent:** The turbine will be required to burn only Public Utilities Commission (PUC) regulated natural gas which meets this requirement. **Consistent:** The emergency engine will only use ARB-certified diesel fuel that meets this limit.
Rule 74.9 - Stationary Internal Combustion Engines	The diesel-fueled internal combustion engine is subject to the test methods and reporting requirements of this rule.	**Consistent:** The conditions of certification contained in this PSA ensure compliance with this rule.
Rule 74.23 - Stationary Gas Turbines	This rule establishes operating requirements and emission limits, test methods, and reporting and record keeping requirements for the stationary gas turbines.	**Consistent:** The conditions of certification contained in this PSA ensure compliance with this rule.
Rule 103 - Continuous Monitoring Systems	The requirements of Rule 103 include installation, calibration, and maintenance of the system in accordance with the specifications for electric power generating units in 40 CFR, Part 75, Continuous Emission Monitoring, Subpart C, Operation and Maintenance Requirements, which includes by reference Appendix A to Part 75, Specifications and Test Procedures, and Appendix B to Part 75, Quality Assurance and Quality Control Procedures.	**Consistent:** The application proposes that each of the new GE LM6000 turbines will be equipped with NOx, CO, and O_2 Continuous Emission Monitors (CEMs). Condition of Certification **AQ-6** ensures compliance with this rule.

METEOROLOGICAL CONDITIONS

Ventura County has a Mediterranean climate, typical of most coastal California cities and is known to experience Santa Ana winds off the Transverse Ranges on occasion, which can increase temperatures. The area is controlled by a subtropical high-pressure system that is located off the Pacific Coast. In the summer, this strong high-pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months of June through August because storms are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high-pressure pattern weakens and moves south, allowing storm systems to move through the area. Temperature, winds, and rainfall are more variable during these months, and stagnant conditions occur more frequently than during summer months. Weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent marine layer conditions, with or without ground fog, that can occur during extended parts of the year. The city of Ventura receives an average of 15.8 inches of rain annually (WC 2016).

The nearest representative surface meteorological data set in the general area of Mission Rock was from the Camarillo Airport Automated Surface Observation Station (ASOS) located about 11 kilometers (km) south of the Mission Rock site. The Camarillo surface meteorological data set was provided by the San Joaquin Valley Air Pollution Control District (SJVAPCD) for the most recent five-year period, 2011-2015, and was used in the air quality impact analysis which is discussed in more detail below. The most predominant annual wind direction from this monitoring site is from the west-southwest with a strong secondary east-northeast component. The average wind speed is 2.92 meters per second (m/s) and calm winds (less than 0.5 m/s) occur infrequently, about one percent of the time.

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

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 ambient air quality standards are set to protect public health 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).

The primary health effects of the criteria air pollutants are as follows:

- Ozone (O_3): aggravation of respiratory and cardiovascular diseases; impairment of cardiopulmonary function; and eye irritation. Ozone can also affect sensitive plant species by interfering with photosynthesis, and is therefore a threat to California agriculture and native vegetation.
- Particulate matter (PM10 and PM2.5): increased risk of chronic respiratory disease such as bronchitis, emphysema, and asthma; reduced lung function; increased cough and chest discomfort. Particulates may lodge in and/or irritate the lungs.
- Carbon monoxide (CO): impairment of oxygen transport in the bloodstream; aggravation of cardiovascular disease; impairment of central nervous system function; fatigue, headache, confusion, dizziness; death at high levels of exposure; and aggravation of some heart diseases (angina).
- Nitrogen dioxide (NO_2): risk of acute and chronic respiratory disease.
- Sulfur dioxide (SO_2): aggravation of respiratory diseases (asthma, emphysema); reduced lung function; and irritation of eyes.

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 federal 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 air quality standards are listed in **Air Quality Table 2**. The averaging times for the various ambient air quality standards range from one hour to one year. The standards are read as a concentration, in parts per million (ppm), 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.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	Federal Standard
Ozone (O_3)	One Hour	0.09 ppm (180 µg/m^3)	None
	Eight Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	150 µg/m^3
	Annual	20 µg/m^3	None
Fine Particulate Matter (PM2.5)	24 Hour	None	35 µg/m^{3,a}
	Annual	12 µg/m^3	12 µg/m^3
Carbon Monoxide (CO)	One Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
	Eight Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	One Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)^b
	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	One Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)^c
	24 Hour	0.04 ppm (105 µg/m^3)	None^d

Source: ARB 2017 (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf), February 2017 and EPA 2017 (https://www.epa.gov/criteria-air-pollutants/naaqs-table), February 2017.
Notes:
a. The 24-hour PM2.5 NAAQS is based on the three-year average of the 98th percentile concentrations.
b. The one-hour NO_2 NAAQS is based on the three-year average of the 98th percentile of the one-hour daily maximum concentrations.
c. On June 2, 2010, the U.S. EPA established a new federal one-hour SO_2 standard. The one-hour SO_2 NAAQS is based on the three-year average of the 99th percentile of the one-hour daily maximum concentrations.
d. On August 23, 2010, the U.S. EPA revoked both the existing federal 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm.

The California Air Resources Board and the U.S. EPA designate regions where ambient air quality standards are not met as “nonattainment areas.” Where a pollutant exceeds standards, the federal and state Clean Air Acts both require air quality management plans and rules to achieve these standards. These requirements also provide the basis for implementing agencies to develop mobile and stationary source performance standards.

EXISTING AIR QUALITY

The Mission Rock project site is located within the South Central Coast Air Basin (SCCAB). This area is designated as nonattainment for both the federal and state ozone standards and the state PM10 standards. **Air Quality Table 3** summarizes federal and state attainment status of criteria pollutants for the SCCAB.

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

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

Source: ARB 2017a (http://www.arb.ca.gov/desig/adm/adm.htm).

The Mission Rock site would be located at 1025 Mission Rock Road, which is west of the city of Santa Paula. The monitoring stations closest to the proposed site with long-term records for ozone, NO_2, PM10, PM2.5, SO_2 and CO are the El Rio, Ojai, Thousand Oaks, Piru, Semi Valley, Goleta, and Exxon Site 10 monitoring stations. **Air Quality Table 4** provides the approximate distance and direction of each monitoring station from the proposed project site, and describes which criteria pollutants are monitored at each station.

Air Quality Table 4
Nearest Monitoring Stations to Mission Rock

Monitoring Station	Distance from Mission Rock	Direction from Mission Rock	Criteria Pollutants Monitored					
			Ozone	NO2	PM10	PM2.5	SO2	CO
El Rio - Rio Mesa School #2	4.5 miles	Southwest	x	x	x	x		
Ojai - Ojai Avenue	12 miles	Northwest	x			x		
Thousand Oaks - Moorpark Road	15 miles	Southeast	x			x		
Piru - 3301 Pacific Avenue	18 miles	East - Northeast	x			x		
Semi Valley - Cochran Street	24 miles	East - Southeast	x	x	x	x		
Goleta - Fairview	42 miles	West - Northwest						x
Exxon Site 10 - UCSB West Campus	45 miles	West - Northwest					x	

Source: ARB 2017b (http://www.arb.ca.gov/adam/welcome.html).
Note: "X" denotes monitoring station monitors for that criteria pollutant.

The nearest monitoring station to the Mission Rock project site is the El Rio monitoring station, which is located approximately four and a half miles from the proposed site. The El Rio monitoring station has long-term records for ozone, PM10, PM2.5 and NOx. Staff considers the El Rio monitoring station the most representative of the nearest monitoring stations due to: (1) the proximity to the project site; (2) proximity and orientation to the ocean with respect to the proposed project site; and (3) similarities in surrounding topography compared to the proposed project site. Therefore, staff selected background concentrations for all criteria pollutants from this monitoring station, with the exception of CO and SOx data, to represent background concentrations for Mission Rock.

The most representative monitoring stations that monitor and record CO and SOx data are the Goleta - Fairview monitoring station and Exxon Site 10 - UCSB West Campus monitoring station, respectively, which are located approximately 40 miles northwest of the project site. The Goleta and Exxon Site 10 monitoring stations are more representative of conditions at the Mission Rock project site, compared to other monitoring stations that are located more inland, due to their proximity and orientation to the ocean. The exposure of these stations to sources of CO and SOx are expected to be similar compared to the proposed site. Additionally, the entire state is in attainment for CO and SOx and the monitored concentrations are well below the CAAQS/NAAQS.

Nonattainment Criteria Pollutants

This section summarizes the existing ambient monitoring data for nonattainment criteria pollutants (ozone and PM10) collected by ARB from monitoring stations closest to the project site. Data from multiple stations near the project site are provided to show air quality trends for nonattainment criteria pollutants in the surrounding area from 2005 to 2016. Data marked in **bold** and shaded indicates 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 can lead to designation of an area as nonattainment.

Ozone

Ozone is not directly emitted from stationary or mobile sources, but the contaminant is formed as the result of chemical reactions in the atmosphere between precursor air pollutants. The primary ozone precursors are NOx and VOC (also known as reactive organic compounds [ROC] or precursor organic compounds [POC]), which interact in the presence of sunlight and warm air temperatures to form ozone. 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 tend to occur between June and August.

Air Quality Table 5 summarizes the ambient ozone data collected from the monitoring stations closest to the project site.

Air Quality Table 5
Background Ozone Air Quality Data (ppm)

Location, Year	Maximum 1-hour Ozone Concentration	Days Above CAAQS (0.090 ppm)	Maximum 8-hour Ozone Concentration	Days Above CAAQS (0.070 ppm)
El Rio - Rio Mesa School #2				
2005	0.076	0	0.068	0
2006	0.089	0	0.070	0
2007	0.089	0	**0.072**	**1**
2008	0.086	0	**0.075**	**1**
2009	**0.099**	**1**	**0.077**	**1**
2010	0.083	0	**0.073**	**1**
2011	0.081	0	0.069	0
2012	0.082	0	0.065	0
2013	0.067	0	0.063	0
2014	**0.112**	**1**	**0.077**	**2**
2015	0.070	0	0.066	0
2016	0.084	0	**0.071**	**1**
Ojai - Ojai Avenue				
2005	**0.110**	**8**	**0.093**	**33**
2006	**0.111**	**6**	**0.100**	**38**
2007	0.093	0[b]	**0.085**	**16**
2008	0.093	0[b]	**0.084**	**29**
2009	**0.102**	2	**0.095**	**20**
2010	**0.099**	**1**	**0.084**	**10**
2011	**0.101**	**2**	**0.086**	**12**
2012	**0.099**	**2**	**0.082**	**24**
2013	**0.101**	**1**	**0.085**	**5**
2014	0.087	0	**0.082**	**9**
2015	0.086	0	**0.077**	**7**
2016	0.087	0	**0.079**	**5**
Thousand Oaks - Moorpark Road				
2005	**0.109**	**2**	**0.083**	**11**
2006	**0.096**	**2**	**0.083**	**9**
2007	**0.112**	**2**	**0.102**	**8**
2008	**0.103**	**1**	**0.084**	**13**
2009	**0.109**	**4**	**0.086**	**9**
2010	**0.104**	**2**	**0.091**	**9**
2011	0.093	0[b]	**0.079**	**7**
2012	0.090	0	**0.076**	**2**
2013	**0.099**	**1**	**0.081**	**1**
2014	0.092	0[b]	**0.082**	**6**
2015	0.078	0	0.069	0
2016	0.080	0	**0.076**	**1**

Source: ARB 2017b, Air Quality Data Statistics (http://www.arb.ca.gov/adam/welcome.html), accessed August 2017.
Notes:
a. An exceedance is not necessarily a violation.
b. ARB does not have any "Days Above Standard" listed for this value.

Respirable Particulate Matter (PM10)

PM10 is a mixture of particles and droplets that vary in size and chemical composition, depending upon the origin of the pollution. An extremely wide range of sources, including natural causes, most mobile sources, and many stationary sources, cause emissions that directly and indirectly lead to increased ambient particulate matter. This makes it an extremely difficult pollutant to manage. Particulate matter caused by any combustion process can be generated directly by burning the fuel, but it can also be formed downwind when various precursor pollutants chemically interact in the atmosphere to form microscopic, solid precipitates. These solid particles are called secondary particulate matter since the contaminants are not directly emitted, but the particles are indirectly formed as a result of precursor emissions. Gaseous contaminants such as NOx, SOx, organic compounds, and ammonia (NH_3) from natural or man-made sources can form secondary particulate nitrates, sulfates, and organic solids. Secondary particulate matter is mostly the finer portion PM10, whereas particles from dust sources tend to be the coarser portion of PM10.

Air Quality Table 6 summarizes the maximum PM10 concentration data collected from the closest monitoring stations near the project site. PM10 is primarily a winter problem; however, high regional PM10 levels can occur at other times of the year as well. This is because ammonium nitrate and ammonium sulfate particles tend to form most readily in colder weather and at times of low wind speeds, high humidity, and stable conditions, whereas high levels of summertime PM10 tend to be caused by direct sources, including wildfires. Some of the highest concentrations are recorded during times of heavy wildfire activity nearby, as was the case in October of 2007. States can flag data for potential exclusion for non-attainment designations if they have been influenced by an exceptional event (e.g. high winds, wildfire).

Air Quality Table 6
Background PM10 Air Quality Data (µg/m^3)

Location, Year	Maximum 24-hr PM10 Concentration[a]	Month of Maximum 24-hr Concentration	Estimated Days Above CAAQS[b]	Estimated Days Above NAAQS[b]	Annual Average PM10 Concentration[a]
El Rio - Rio Mesa School #2					
2005	**54.4**	JUL	12.1	0	**25.5**
2006	**119.1**	JUL	24	0	**27.8**
2007	**65**[c]	APR	12.2	6.1	**29.7**
2008	**79.8**	JUL	18.3	0	**26.2**
2009	**99.9**	OCT	12.2	0	**25.6**
2010	**61.5**	MAR	6.0	0	**21.7**
2011	**51.7**	AUG	5.7	0	**22.2**
2012	**56.9**	AUG	5.7	0	**21.0**
2013	**106**[c]	OCT	--	0	**24.3**
2014	**118**	OCT	7.1	0	**27.4**
2015	**93**	NOV	6.0	0	**25.6**
2016	**101.6**	SEP	--	0	**24.6**
Semi Valley - Cochran Street					
2005	**74**	JUL	6.5	0	**24.5**
2006	**55.8**	MAY	6.5	0	**21.9**
2007	**57.1**[c]	APR	24.4	0	**28.5**
2008	**80.1**	JUL	12.2	0	**26.6**
2009	**76.8**	OCT	6.1	0	**25.5**
2010	35.2	DEC	0	0	18.8
2011	45.8	FEB	0	0	19.6
2012	37.9	OCT	0	0	19.5
2013	**122.3**	OCT	--	0	**22.5**
2014	**57.2**	APR	1.0	0	**24.1**
2015	**62.8**	FEB	3.0	0	**20.8**
2016	**63**[c]	SEP	--	0	**22.9**

Source: ARB 2017b, Air Quality Data Statistics (http://www.arb.ca.gov/adam/welcome.html), accessed August 2017. EPA 2017a, Monitor Values Report (http://www.epa.gov/airdata/ad_rep_mon.html), accessed August 2017.

Notes:

a. Where California measurements are not available the National measurements are shown. California measurements are based on California approved samplers, whereas national measurements are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

b. The number of days above the standard is calculated by ARB. Because PM10 is monitored approximately once every six days, the potential number of violation days is calculated by multiplying the actual number of days of violations by six.

c. This value excludes an "exceptional event" (e.g. high winds, wildfire, etc.).

d. Dashes indicate that there was insufficient data to determine value, or data were not available during high periods.

Attainment Criteria Pollutants

Air Quality Table 7 shows the maximum concentrations from the nearest monitoring station for the criteria pollutants that attain all ambient air quality standards.

Air Quality Table 7
Background Concentrations of Attainment Criteria Pollutants (µg/m^3)

Pollutants	Averaging Time	2010	2011	2012	2013	2014	2015	2016
NO_2	1-hour	113.0	169.5	107.4	75.3	73.5	67.8	62.2
	1-hour Federal[a]	69.6	69.6	62.0	62.0	56.4	52.6	54.5
	Annual	13.3	13.3	13.3	13.3	11.4	11.4	9.5
PM2.5	24-hour Federal[b]	16.5	17.4	17.0	17.7	17.8	21.5	16.2
	Annual	8.5	11.4	8.7	9.4	9.4	9.7	8.2
CO	1-hour	2,300	2,300	1,840	1,150	1,035	1,035	1,955
	8-hour	667	667	778	778	556	556	889
SO_2	1-hour	13.1	7.9	5.2	5.2	10.5	5.2	5.2
	1-hour Federal[c]	10.5	5.2	5.2	5.2	2.6	2.6	2.6
	24-hour	3.9	3.4	3.4	5.2	0.8	2.1	2.6

Source: ARB 2017b, Air Quality Data Statistics (http://www.arb.ca.gov/adam/welcome.html), accessed August 2017. EPA 2017a, Monitor Values Report (http://www.epa.gov/airdata/ad_rep_mon.html), accessed August 2017.
Notes:
a. The federal one-hour NO_2 NAAQS is based on the three-year average of the 98 percentile of the yearly distribution of one-hour daily maximum concentrations.
b. The 24-hour PM2.5 NAAQS is based on the three-year average of the 98th percentile concentrations.
c. The federal one-hour SO_2 NAAQS is based on the three-year average of the 99 percentile of the yearly distribution of one-hour daily maximum concentrations.

Nitrogen Dioxide

A majority of the NOx emitted from combustion sources is usually in the form of nitric oxide (NO), while the balance is nitrogen dioxide (NO_2), although the percentage can vary by the type of fuel and the configuration of the combustion equipment. Once emitted from a stack, NO is oxidized in the presence of ozone to form NO_2, but some level of photochemical activity is needed for this conversion. High concentrations of NO_2 occur during the fall (not in the winter) when atmospheric conditions tend to trap ground-level releases but lack significant photochemical activity (less sunlight) to form ozone and nitric oxide. In the summer, the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions (atmospheric unstable conditions) tend to engage the NO in reactions with VOC and POC to create ozone and also disperse the NO_2. The formation of NO_2 in the summer, with the help of the ozone, is according to the following reaction:

$$NO + O_3 \leftrightarrow NO_2 + O_2$$

Urban areas typically have relatively 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.

Fine Particulate Matter (PM2.5)

Particles and droplets with an aerodynamic diameter less than or equal to 2.5 microns (PM2.5) penetrate more deeply into the lungs than PM10, and can therefore be much more damaging to public health than particles that make up the reminder of the PM10.

PM2.5 is mainly a product of combustion and includes nitrates, sulfates, organic carbon (ultra-fine dust), and elemental carbon (ultra-fine soot). 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. Ammonium sulfate is also a concern because of the ready availability of ammonia in the atmosphere.

Carbon Monoxide

Carbon monoxide (CO) is a by-product of incomplete combustion common to any carbon-bearing fuel-burning source. Mobile sources are the main sources of CO emissions. Ambient concentrations of CO are highly dependent on motor vehicle activity, with highest concentrations usually found near traffic congested roadways and intersections. Ambient CO concentrations attain the air quality standards due to two state-wide 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 and long-term maintenance of the CO ambient air quality standards.

Sulfur Dioxide

Sulfur dioxide is typically emitted as a result of the combustion of fuels containing sulfur. When high levels are present in ambient air, SO_2 leads to sulfite particulate formation and acid rain. Natural gas contains very little sulfur and therefore results in low SO_2 emissions when burned. By contrast, high sulfur fuels like coal emit large amounts of SO_2 when burned. Sources of SO_2 emissions come from every economic sector and include a wide variety of gaseous, liquid, and solid fuels. The entire state is designated attainment for all SO_2 ambient air quality standards.

Summary of Existing Ambient Air Quality

Recent local ambient air quality data show existing violations of ambient air quality standards for ozone and PM10. Staff uses the highest local background ambient air concentrations from the last three years (2014 to 2016) as the baseline for analyzing potential ambient air quality impacts for the proposed project. The highest background concentrations from the previous three years are shown in **Air Quality Table 8**.

The project's air quality impact modeling analysis was limited by the availability of recommended computer models to the pollutants listed in **Air Quality Table 8**. Therefore, establishing background concentrations is not necessary for other criteria pollutants (ozone and lead).

Air Quality Table 8
Staff-Recommended Background Concentrations (µg/m^3)[a]

Pollutant	Averaging Time	Background[b]	Limiting Standard	Percent of Standard
PM10	24-hour	**118**	50	**236**
	Annual	**27.4**	20	**137**
PM2.5	24-hour Federal[c]	21.5	35	61
	Annual	9.7	12	81
CO	1-hour	1,955	23,000	9
	8-hour	889	10,000	9
NO_2	1-hour	73.5	339	22
	1-hour Federal[c]	56.4	188	30
	Annual	11.4	57	20
SO_2	1-hour	10.5	655	2
	1-hour Federal[d]	2.6	196	1
	24-hour	2.6	105	2

Source: ARB 2017b and EPA 2017a.
Notes:
a. Background concentrations for all criteria pollutants are presented in micrograms per cubic meter (µg/m^3) for consistency with the AERMOD output default units.
b. Background values represent the highest measured concentration from 2013 to 2015 from the El Rio - Rio Mesa School #2 monitoring station for all criteria pollutants, with the exception of CO and SO_2. Highest background concentrations for CO and SO_2 are from the Goleta - Fairview monitoring station and the Exxon Site 10 - UCSB West Campus monitoring station, respectively.
c. Three-year average of the 98th percentile concentration.
d. Three-year average of the 99th percentile concentration.

PROJECT DESCRIPTION AND PROPOSED EMISSIONS

Mission Rock, LLC, is proposing to construct and operate a 275-MW (nominal) natural gas-fired, simple-cycle power plant and onsite batteries. Mission Rock is planned to operate as a peaking power plant and is proposed to operate up to approximately 2,500 hours per year, with a facility capacity factor of up to 29 percent[1]. Mission Rock would consist of the following emissions sources:

- Five LM6000 PG Sprint gas turbines with inlet chilling, a selective catalytic reduction (SCR) system to control emissions of NOx, and an oxidation catalyst to control CO and VOC emissions.
- A California Air Resources Board (CARB)-certified Tier 3 diesel-fueled fire pump.
- A six (6) cell wet surface air cooler (Wet SAC).

[1] This is the maximum permitted limit. The actual facility capacity factor is expected to be around 11 percent, based off data generated using the Energy Commission Almanac, QFER database for the Big Creek Local Reliability Area (LRA) (CEC2016).

The Mission Rock project emissions and associated impacts are evaluated in three separate phases; construction, initial commissioning, and facility operation. The expected emissions and impacts of each phase are discussed in more detail in the subsequent sections below.

PROPOSED CONSTRUCTION EMISSIONS

Construction activities at the project site are expected to last 23 months, starting in November of 2018 and continuing until September of 2020. Pre-operational testing of the power plant is expected to begin in April 2020, and full-scale commercial operation is expected to begin by September 2020 (CAL2015a, ES-3).

During the first year of operation, plant commissioning activities would occur. Commissioning is planned to occur over an estimated 213 hours per turbine, and would have higher hourly and daily emission profiles than during normal operations because the emission control systems are not yet fully functional.

The plant is being evaluated for an operational scenario of 2,500 hours per year (hr/yr), including 150 startup and shutdowns per turbine per year. Short-term and annual emissions derived from the proposed operating scenarios are used in the air quality impact analysis and are included in the conditions of certification to ensure compliance with the ambient air quality standards (AAQS). The continuous emissions monitoring system (CEMS), along with hourly fuel use monitoring and source test requirements, establish a compliance method to allow for continuous tracking of all emissions at the Mission Rock.

Construction of Mission Rock is expected to take approximately 23 months. Mission Rock is proposed to be located on a 9.79-acre parcel that is currently used for recreational vehicle and boat storage. Temporary construction facilities would include a 2.89-acre worker parking and laydown area immediately north of the Mission Rock site.

Construction of the Mission Rock project would occur in the following phases:

- Phase 1: Mobilization and site preparation (months 1-3);
- Phase 2: Civil improvements, including grading and excavation (months 2-8);
- Phase 3: Power plant construction (months 5-12);
- Phase 4: Building construction, including interconnection facilities and maintenance buildings (months 11-22);
- Phase 5: Construction related to commissioning, for example, service vehicles and equipment deliveries, etc. (months 17-23).

AFC, Appendix 5.1E (CAL2015a) and Responses to Staff's Data Requests, Set 4 (Nos. 159-168) (CH2M2017f) provide a detailed list of all vehicles and equipment that are expected to be used during the various phases of the construction schedule, including hours of operation and emission factors for each vehicle and piece of equipment. The worst-case daily emissions would occur during the overlap of Phase 2 (Civil Improvements) and Phase 3 (Power Plant Construction) construction activities.

Exhaust emissions were derived by the applicant using the California Emissions Estimator Model® (CalEEMod) system. Staff reviewed these calculations and found them to be appropriate for evaluating air quality impacts during construction.

The estimated annual emissions are based on total project emissions over the 23-month construction schedule and are annualized for one year. The expected highest daily and annual emissions are shown in **Air Quality Table 9**.

Air Quality Table 9
Onsite Maximum Construction Emissions

	NOx	VOC	PM10	PM2.5	CO	SOx
Pounds per day (lb/day)						
Vehicle and Equipment Exhaust[a]	19.57	4.51	0.382	0.382	127.0	0.255
Fugitive Dust[b]	--	--	3.32	0.643	--	--
Total Daily Emissions (lb/day)	**19.57**	**4.51**	**3.702**	**1.025**	**127.0**	**0.255**
Tons per year (tpy)						
Vehicle and Equipment Exhaust[c]	1.36	2.92	0.026	0.025	8.40	0.018
Fugitive Dust[c]	--	--	0.242	0.045	--	--
Total Annual Emissions (tpy)	**1.36**	**2.92**	**0.27**	**0.07**	**8.40**	**0.018**

Sources: CAL2015a Appendix 5.1E (TN: 207151-1); CH2M2017f (TN: 216215); and CH2M2017m (TN: 217343).
Notes:
a. Maximum daily emissions for onsite exhaust occur during month 7 which includes Phase 2 (Civil Improvements) and Phase 3 (Power Plant Construction) construction activities.
b. Sum of fugitive emissions associated with Phase 2 (Civil Improvements) and Phase 3 (Power Plant Construction), storage pile fugitive dust, on-site paved road travel, on-site unpaved road travel, and track out fugitive dust.
c. Total onsite construction emissions normalized for one year.

Air Quality Table 10 provides the estimated total offsite vehicle exhaust and fugitive dust emissions that would occur over the 23-month construction schedule as a result of delivery and hauling vehicle exhaust, construction site support vehicle exhaust, worker travel exhaust, worker bus exhaust, and offsite paved road travel.

Air Quality Table 10
Total Offsite Construction Emissions (tons[a])

	NOx	VOC	PM10	PM2.5	CO	SOx
Vehicle and Equipment Exhaust[b]	7.0	1.35	0.62	0.62	8.45	0.044
Fugitive Dust[c]	--	--	0.832	0.137	--	--
Total of Offsite Emissions	**7.0**	**1.35**	**1.45**	**0.76**	**8.45**	**0.044**

Source: CAL2015a, Appendix 5.1E (TN: 207151-1); CH2M2017f (TN: 216215); and CH2M2017m (TN: 217343).
Notes:
a. Construction period is 23 months.
b. Includes delivery and hauling vehicle exhaust, construction site support vehicle exhaust, worker travel exhaust and worker bus exhaust.
c. Offsite paved road fugitive dust emissions.

PROPOSED INITIAL COMMISSIONING EMISSIONS

New electrical generation facilities must go through initial commissioning phases before becoming commercially available to generate electricity. During this period, initial firing often causes greater 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.

The total duration of the commissioning period is expected to occur over an estimated 213 hours per turbine without (or with partial) emission control systems in operation. AFC, Appendix 5.1A, Table 5.1A-7 provides the commissioning schedule provided by the combustion turbine manufacturer (GE Energy) and emission estimates for the various phases of commissioning. Table 5.1A-7 shows that emissions vary throughout the commissioning period, depending on the testing being conducted and whether the turbines are being operated without (or with partial) emission control systems in operation. The applicant proposes to limit concurrent operation to no more than two turbines operating during all phases of commissioning. The proposed commissioning schedule and emission rates, including the number of turbines that could be operated during the commissioning period, are limited by **AQ-30**. These operational limitations were included in the air quality impact analysis.

Air Quality Table 11 presents the applicant's anticipated maximum hourly and event commissioning emission rates for criteria pollutants. Emission rates for PM10/PM2.5 and SOx during initial commissioning are not included in the table because they are not expected to be higher than normal operating emissions (VCAPCD 2017).

Air Quality Table 11
Maximum Initial Commissioning Emissions (lb/hr and tons/event)

Source	NOx	VOC	CO
Maximum Hourly (lb/hr) (per turbine)	68.0	3.0	117.3
Total Commissioning Period (tons/event) (all five turbines)	10.33	0.82	22.14

Source: CAL2015a (TN207151-1).

PROPOSED OPERATION EMISSION CONTROLS

NOx Controls

The combustion turbine generators (CTGs) would use natural gas and best combustion practices, along with water injection in the turbine combustors to limit NOx production and a selective catalytic reduction (SCR) system with aqueous ammonia for post-combustion NOx control. Exhaust from each turbine would enter the SCR system before being released into the atmosphere. SCR refers to a process that chemically reduces NOx to nitrogen (N_2) and water vapor (H_2O) by injecting urea-based ammonia (NH_3) into the flue gas stream in the presence of a catalyst and excess oxygen. The process is termed selective because the ammonia preferentially reacts with NOx rather than oxygen. The catalyst material most commonly used is titanium dioxide, but materials such as vanadium pentoxide, zeolite, or noble metals are also used. Regardless of the type of catalyst used, efficient conversion of NOx to nitrogen and water vapor requires the uniform mixing of ammonia into the exhaust gas stream and a catalyst volume large enough to ensure sufficient time for the reaction to take place.

VOC and CO Controls

Emissions of CO and unburned hydrocarbons, including VOC, would be controlled with an oxidation catalyst installed in conjunction with the SCR catalyst. An oxidation catalyst system chemically reacts with organic compounds and CO with excess oxygen to form carbon dioxide (CO_2) and water. Unlike the SCR system for reducing NOx, an oxidation

catalyst does not require any additional chemicals. CO catalysts are typically used immediately upstream of the SCR catalyst.

PM10/PM2.5 and SOx Controls

The CTGs would fire exclusively pipeline-quality natural gas, a clean-burning fuel that contains very little sulfur or noncombustible solid residue, to limit the formation of SOx and particulate matter. Natural gas does contain small amounts of a sulfur-based scenting compound known as mercaptan as a safety measure, which results in some SOx emissions when burned. However, in comparison with other fossil fuels used in thermal power plants, such as coal and oil, SOx emissions from natural gas combustion are very low. Particulate matter emissions from natural gas combustion are also very low compared with other fossil fuels. Inlet air filtration also helps to control particulate emissions by removing ambient particulate matter from incoming air.

Ammonia Emissions Resulting from NOx Controls

Aqueous ammonia 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 system and is emitted unaltered from the stacks. These ammonia emissions are known as ammonia slip. The applicant proposes to limit ammonia slip (NH_3) emissions from each CTG emission control system to 5 per million by volume, dry basis (ppmvd), as required by **AQ-29**.

PROPOSED OPERATION EMISSIONS

Air Quality Table 12 through **Air Quality Table 15** summarizes the maximum (worst-case) criteria pollutant emissions associated with the Mission Rock project's normal and routine operation. Emissions for each engine are based upon:

- NOx emissions controlled to 2.5 ppmvd corrected to 15 percent oxygen, averaged over any one-hour period except during startups and combustor tuning;
- VOC, also known as ROC, emissions controlled to 1.0 ppmvd at 15 percent O_2;
- CO emissions controlled to 4.0 ppmvd at 15 percent O_2 for any one-hour period;
- PM10/PM2.5 emissions would be limited to 2 lb/hr;
- SOx emissions would be based on natural gas consisting of no more than 0.75 grains/100 standard cubic feet (scf);
- NH_4 emissions would be limited to 5 ppmvd.

A startup event is defined as a 30 minute event with the turbine stack emissions in compliance with the steady-state emission limits for the remainder of the hour. The duration of a shutdown event is expected to be nine minutes. The applicant has assumed the facility would undergo 150 startup and shutdowns annually for the air quality impact analysis.

Since PM10 and SOx emissions are proportional to fuel use, PM10 and SOx emissions rates would be lower during any partial-load operation and only fluctuate slightly during startup and shutdown scenarios. **Air Quality Table 12** lists the maximum CTG startup and shutdown emission rates in pound per hour (lb/hr) and pound per event (lb/event) bases.

Air Quality Table 12
Facility Startup and Shutdown Emission Rates

Event	NOx	VOC	PM10/ PM2.5	CO	SOx
Startup (lb/event/turbine)	9.1	1.0	1.0	5.5	0.595
Startup (lb/hr/turbine)	11.65	1.36	2.0	7.99	1.19
Shutdown (lb/event/turbine)	1.2	1.0	0.30	1.8	0.595
Shutdown (lb/hr/turbine)	5.54	1.60	2.0	6.02	1.19

Source: CAL2015a (TN207151-1) and VCAPCD 2017.

AFC, Appendix 5.1A, Attachment 5.1A-1 provides turbine emission data and exhaust parameters over a wide range of ambient and operating cases. Some of the worst case short-term emissions and air quality impacts occur when the turbines are operating at full load and ambient temperatures are low. **Air Quality Table 13** lists the steady-state emissions during routine operation for cold days (ambient temperature of 30 degrees Fahrenheit), steady-state routine operation during an average temperature day (ISO day – ambient temperature of 59 degrees Fahrenheit) and the maximum hourly emissions from the proposed equipment (including startup and shutdowns).

Emissions for NOx, CO, and VOC during startup and shutdown events would have higher emissions than during steady-state operation. The applicant's proposed worst case hourly NOx and CO emissions are based on a startup with the remainder of the hour operating in steady state, while hourly VOC emissions are based on a shutdown event with the remainder of the hour operating in steady state.

Air Quality Table 13
Maximum Hourly Emissions (pounds per hour [lb/hr])

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Combustion Turbines					
Each CTG (steady state – cold day)[a]	5.1	0.71	2.0	4.97	1.19
Each CTG (steady state – ISO day)[b]	4.04	0.705	2.0	4.92	1.19
Each CTG (worst case hour)[c]	11.65	1.60	2.0	7.99	1.19
Total Maximum Hour (Five CTGs)	58.25	8	10	39.95	5.95
Wet Surface Air Condenser[d]	--	--	0.45	--	--
Fire Pump Engine[e]	1.36	0.10	0.07	1.26	0.0023

Source: CAL2015a (TN207151-1), CH2M2017m (TN217343) and VCAPCD 2017.
Notes:
a. Emissions reflect full load operation at 30°F ambient temperature.
b. Emissions reflect full load operation at 59°F ambient temperature.
c. Emissions of NOx and CO reflect a startup with the remaining hour of operation in steady state. Emissions of VOC reflect a shutdown with the remaining hour of operation in steady state.
d. Wet SAC emissions are based on 1700 mg/l TDS at 5 cycles of concentration.
e. The fire pump emissions represent 60 minutes for testing. However, **AQ-62** limits readiness testing to 30 minutes for consistency with the applicant's air quality modeling impact assessment.

Air Quality Table 14 lists the worst-case emissions during any given day of operation of the proposed Mission Rock. The maximum daily turbine emissions represent two startups and two shutdowns, with the remaining 22 hours and 42 minutes representing steady-state operation at 30 degrees Fahrenheit ambient temperature (cold day).

Air Quality Table 14
Maximum Daily Emissions (lb/day)

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Combustion Turbines[a]					
Each CTG	136.37	20.12	48.0	127.42	28.56
Five CTGs Total	681.85	100.6	240	637.1	142.8
Wet Surface Air Condenser[b]	--	--	10.88	--	--
Fire Pump Engine[c]	1.36	0.10	0.07	1.26	0.0023
Total Maximum Daily Emissions	**683.21**	**100.7**	**250.95**	**638.36**	**142.8**

Source: CAL2015a (TN207151-1) and CH2M2017m (TN217343).
Notes:
a. Emissions represent two startups and two shutdowns, with the remaining hours in steady-state operation (cold day).
b. Wet SAC emissions are based on 1700 mg/l TDS at 5 cycles of concentration, 24 hours per day.
c. The fire pump emissions represent 60 minutes for testing. However, **AQ-62** limits readiness testing to 30 minutes for consistency with the applicant's air quality modeling impact assessment.

Air Quality Table 15 lists the maximum potential annual emissions from the proposed project. The maximum annual turbine emissions are based on 2,500 hours of operation. The turbine emissions represent 150 startups and 150 shutdowns, while the remaining 2,402 hours and 30 minutes represent steady-state operation at 59 degrees Fahrenheit ambient temperature (ISO day).

Air Quality Table 15
Maximum Annual Emissions (tpy)

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Combustion Turbines[a]					
Each CTG	5.63	1.0	2.5	6.46	1.48
Five CTGs	28.13	4.98	12.5	32.29	7.40
Wet Surface Air Condenser[b]	--	--	0.57	--	--
Fire Pump Engine[c]	0.035	0.003	0.002	0.033	0.00006
Total Maximum Annual Emissions	28.17	4.983	13.07	32.32	7.40

Source: CAL2015a (TN207151-1), CH2M2017m (TN217343) and VCAPCD 2017.
Notes:
a. Emissions represent 150 startups and 150 shutdowns, with the remaining hours in steady-state operation (ISO day).
b. Wet SAC emissions are based on 1700 mg/l TDS at 5 cycles of concentration, 2500 hrs/yr.
c. **AQ-62** limits fire pump maintenance and readiness testing to 30 minutes in any rolling one hour period and 50 hours per year.

Worker trips and material deliveries cause emissions of criteria pollutants from mobile sources operating offsite. These are shown in **Air Quality Table 16** based on 15 plant employees commuting daily and about 4 deliveries of materials per week.

Air Quality Table 16
Annual Offsite Emissions (tpy)

Source	NOx	VOC	PM10	PM2.5	CO	SOx
Worker Commutes (Offsite)	0.0117	0.0005	0.0009	0.0002	0.0044	0.00001
Material Deliveries[a] (Offsite)	0.0112	0.0015	0.0016	0.0006	0.0099	0.00001
Total Annual Emissions (tpy)	**0.0229**	**0.002**	**0.0025**	**0.0008**	**0.0143**	**0.00002**

Source: CAL2017f (TN: 216215), Attachment B.
Notes:
a. Includes emissions from both gasoline and diesel delivery vehicles.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

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

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

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

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

DIRECT/CUMULATIVE IMPACTS AND MITIGATION

While the emissions are the actual mass of pollutants emitted from the project, the impacts are the concentration of pollutants from the project that reach the ground level.

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

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

Dispersion models complete the complex, repeated calculations that analyze the emissions in the context of various ambient meteorological conditions, local terrain, and nearby structures that affect air flow. For Mission Rock the surface meteorological data (e.g. wind speed, wind direction, and temperature) used as inputs to the dispersion model included five years of hourly data collected at the Camarillo Airport Automated Surface Observation Station (ASOS). The surface data have also been coupled with corresponding upper air data measured at Vandenberg Air Force Base for years 2011-2015.

The applicant conducted the air dispersion modeling based on guidance in the document titled Guideline on Air Quality Models (40 CFR Part 51, Appendix W) and using the EPA-approved American Meteorological Society/Environmental Protection Agency Regulatory Model, known as AERMOD (version 16216r). The U.S. EPA designates AERMOD as a “preferred” model for refined modeling in all types of terrain including the vicinity of the proposed Mission Rock. For determining impacts during inversion breakup fumigation conditions, the applicant used the AERSCREEN (version 15181) model.

The federal one-hour NO_2 and 24-hour PM2.5 standards are statistically based (i.e., three-year average 98^{th} percentile values). In order to demonstrate compliance with these standards, the modeled impacts from the project were added to hourly background concentrations conservatively derived from the measured ambient levels. The resulting impacts were then evaluated following EPA guidance to demonstrate compliance with the statistical standard. The federal one-hour SO_2 standard is the maximum modeled concentration combined with the three-year average of the 99^{th} percentile background concentration.

To determine short-term (one-hour) and annual NO_2 impacts during steady state operation, the applicant used the EPA Tier 2 default Ambient Ratio Method (ARM) with a NOx to NO_2 ratio of 0.8 for one-hour impacts and 0.75 for annual impacts. A Tier 3 analysis was used to assess one-hour NO_2 impacts during start-up/shutdown periods and commissioning activities to assess compliance with the NAAQS and CAAQS. The Tier 3 analysis was based on the ozone limiting method (OLM) and used ambient hourly background ozone data measured at the El Rio monitoring station for the modeled years of 2011-2015. Project-related modeled concentrations for all other pollutants and

averaging times are added to highest monitored background concentrations to arrive at the total project impact. 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

The following section discusses the project's direct construction ambient air quality impacts, as estimated by the applicant with background concentrations from the local monitoring stations, and provides a discussion of appropriate mitigation. Staff reviewed the construction emissions estimates and air dispersion modeling procedures. Staff considers the analyses to provide an adequately conservative prediction of project construction impacts.

Construction Impact Analysis

The US EPA approved model AERMOD (version 16216r) was used to estimate ambient impacts from construction activities, consistent with the facility operational impact analyses and the version of AIRMET (version 16216) used by SJVAPCD to process the meteorological data. As with the operational impact analysis, the Camarillo ASOS meteorological data was processed by SJVAPCD in accordance with USEPA guidance using the new USEPA default option, adjusted U*.

The emission sources for the construction site were grouped into two categories: exhaust emissions and fugitive dust emissions. Combustion equipment exhaust emissions were modeled as eighteen (18) 3.048 meter high point sources (exhaust parameters of 750 degrees Kelvin, 64.681 m/s exit velocity, and 0.1524 meter stack diameter) placed at regular 150-foot intervals around the construction area. Construction fugitive dust emissions were modeled as an area source covering the construction area with an effective plume height of 0.5 meters. Combustion and fugitive emissions were assumed to occur for 10 hours/day (7 AM to 5 PM) consistent with the expected period of onsite construction activities generating both exhaust emissions and fugitive dust. The construction impacts modeling analysis generally used the same receptor locations and meteorological data as used for the project operating impact analysis. Exceptions were that only the 10-meter fence line and 20-meter downwash receptor grids were modeled since maximum impacts would occur in the immediate project vicinity and the FASTAREA option was utilized to minimize runtimes for the modeled area source.

The onsite maximum construction emissions provided in **Air Quality Table 9** were used in the modeling analysis to determine the construction phase maximum impacts, as shown in **Air Quality Table 17**.

Air Quality Table 17
Construction-Phase Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	10.2	**118**	**128.2**	50	**256**
	Annual	1.3	**27.4**	**28.4**	20	**144**
PM2.5	24 hour federal[a]	1.98	21.5	23.5	35	67
	Annual	0.24	9.7	9.94	12	83
CO	One hour	206.1	1,955	2,161	23,000	9
	Eight hour	42.2	889	931	10,000	9
NO_2	One hour[b]	15.9	73.5	89.4	339	26
	One hour federal[b,c]	6.4	56.4	62.8	188	33
	Annual[d]	0.4	11.4	11.8	57	21
SO_2	One hour	0.41	10.5	10.9	655	2
	One hour federal[e]	0.41	2.6	3.0	196	2
	24 hour	0.04	2.6	2.6	105	3

Source: CH2M2017m (TN: 217343).
Notes:
a. Total predicted concentration for the federal 24-hour PM2.5 standard is the maximum modeled concentration combined with the three-year average of the 98th percentile background concentration.
b. Ozone Limiting Method (OLM) using concurrent background ozone data from the El Rio monitoring station.
c. Total predicted concentration is the high 8th high pairing of the modeled concentration with the three-year average of the 98th percentile.
d. Ambient Ratio Method (ARM) applied for annual average, using national default value of 0.75.
e. Total predicted concentration for the federal one-hour SO_2 standard is the maximum modeled concentration combined with the three-year average of the 99th percentile background concentrations.

As can be seen from the modeling results provided in **Air Quality Table 17**, the construction impacts have the potential to worsen the existing violations of the 24-hour and annual PM10 ambient air quality standard and are, therefore, potentially significant. The background values of PM10 alone are greater than the CAAQS for both the 24 hour and annual standards. Staff reviewed the modeled impacts including the concentration isopleths modeled over the proposed site. The maximum 24-hour and annual PM10 impacts are located on the northeastern property fence-line. Impacts reduce rapidly with distance from the project fence-line. For example, the maximum 24-hour impact at the Todd Rd Jail facility, which is located approximately 1,000 feet west of the western Mission Rock property fence-line, is 1.24 µg/m^3.

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

Construction Mitigation

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

Applicant's Proposed Mitigation

The applicant's proposed mitigation measures are similar to the mitigation measures of other licensed Energy Commission projects. The following mitigation measures are proposed to control fugitive dust and exhaust emissions from the diesel-fueled heavy duty equipment used during construction of Mission Rock:

- The applicant will have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.
- All unpaved roads and disturbed areas in the project and laydown construction sites will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a minimum schedule of four (4) times during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.
- Onsite vehicle speeds will be limited to 5 miles per hour on unpaved areas within the project construction site.
- The construction site entrance(s) will be posted with visible speed limit signs.
- All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.
- Gravel ramps will be provided at the tire cleaning area.
- All unpaved exits from the construction site will be graveled or treated to reduce track-out to public roadways.
- All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been provided.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.
- All paved roads within the construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.
- The first 300 feet of any public roadway exiting the construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.
- Any soil storage piles and/or disturbed areas that remain inactive for longer than 10 days will be covered, or shall be treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of two (2) feet will be required on all bulk materials transport.

- 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 will remain in place until the soil is stabilized or permanently covered with vegetation.
- Disturbed areas will be re-vegetated as soon as practical.

To mitigate exhaust emissions from construction equipment, the applicant is proposing the following:

- The applicant will work with the construction contractor to utilize to the extent feasible, EPA-ARB Tier 4 engine compliant equipment for equipment over 100 horsepower.
- Insure periodic maintenance and inspections per the manufacturer's specifications.
- Reduce idling time through equipment and construction scheduling.
- Use California low sulfur diesel fuels (<=15 ppmw S).

Adequacy of Proposed Mitigation

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

Staff Proposed Mitigation

Additional measures recommended by staff would reduce construction-phase impacts to a less than significant level by further limiting construction emissions of particulate matter and combustion contaminants. Staff concludes that the short-term and variable nature of construction activities warrants a qualitative approach to mitigation.

Construction emissions and the effectiveness of mitigation varies widely depending on variable levels of activity, the timing of specific work taking place, the specific equipment, soil conditions, weather conditions, and other factors, making precise quantification of emissions and air quality impacts difficult. Despite this uncertainty, there are a number of feasible control measures that can and should be implemented to significantly reduce construction emissions. Staff proposes that prior to the beginning of construction the facility owner should provide, for staff approval, an Air Quality Construction Mitigation Plan (AQCMP) that specifically identifies all mitigation measures used to limit air quality impacts during construction. Staff proposes Conditions of Certification **AQ-SC1** through **AQ-SC5** to implement these requirements. These conditions update the applicant's proposed mitigation measures.

Staff is proposing Air Quality of Condition of Certification **AQ-SC5** to mitigate off-road engine exhaust impacts. Staff is recommending the base engine requirement for exhaust emissions from each U.S.

EPA/ARB non-road diesel engine of 50 horsepower or more to be Tier 4 or 4i. This recommendation would require the applicant to use the cleanest engines available and provides clear direction on the steps the applicant would take if a Tier 4 or 4i engine was not available. This could potentially reduce the PM10, diesel particulate emissions and NOx emission from the off-road equipment. This is a standard requirement proposed by staff on all current projects.

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

Operation Impacts and Mitigation

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

The applicant performed direct impact modeling analyses, including operations, startup and shutdown, fumigation, and an initial commissioning impact analysis. The District also performed these analyses in their Air Quality Impact Analysis and Risk Management Review that is included as Appendix G in the PDOC (VCAPCD 2017). Ventura APCD was assisted in this analysis by the San Joaquin Valley Air Pollution Control District, which has extensive experience doing air quality impact computer modeling.

Operational Modeling Analysis

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 impacts reflect startup and shutdown, and steady-state operation as described in **Air Quality Table 12** through **Air Quality Table 15,** which summarize the worst case operating profile. Turbine emissions and stack parameters, such as flow rate and exit temperature, would exhibit some variation with ambient temperature and CTG operating load. Therefore, to evaluate the worst-case air quality impacts, the applicant conducted an AERMOD screening level dispersion modeling analysis which included 25, 50, 75, and 100 percent CTG loads with and without inlet chilling at 30 degrees Fahrenheit (°F), 39°F, 59°F, 61°F, 76°F, 79°F and 96°F ambient temperatures.

Based on the results of the AERMOD screening analyses, all Mission Rock sources were modeled in the AERMOD refined analysis for comparisons with Significant Impact Levels (SILs) and CAAQS/ NAAQS. SILs are used to evaluate the incremental impact of the facility alone to determine the significance of a proposed source. Impacts during normal operations were based on continuous turbine operations at the worst-case screening condition.

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 with the

highest background levels. The predicted maximum concentrations of criteria pollutants that would occur during steady state operations are summarized in **Air Quality Table 18**. Startup and shutdown impacts are evaluated separately without the operation of the fire pump engine. See **Air Quality Table 19** for these impacts.

Air Quality Table 18
Steady State Operation Maximum Impacts[a] (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	3.38	**118**	**121.38**	50	**243**
	Annual	0.09	**27.4**	**27.49**	20	**137**
PM2.5	24 hour federal[b]	1.64	21.5	23.14	35	66
	Annual	0.09	9.7	9.79	12	82
CO	One hour	98.5	1,955	2,054	23,000	9
	Eight hour	14.7	889	904	10,000	9
NO_2[c]	One hour	85.8	73.5	159.3	339	47
	One hour federal[d]	29.2	56.4	85.6	188	46
	Annual	0.09	11.4	11.5	57	20
SO_2	One hour	14.9	10.5	25.4	655	4
	One hour federal[e]	13.8	2.6	16.4	196	8
	24 hour	1.8	2.6	4.4	105	4

Source: CH2M2017m (TN: 217343).

a. The sources modeled as part of the worst case steady state impacts include the five CTGs, fire pump engine, and wet surface air condenser. Because the fire pump engine will not be operated during turbine startup or shutdown periods, the CTG steady state emissions, as presented in **Air Quality Table 13**, were used to evaluate steady state operation maximum impacts.
b. 24-hour 5-year average of annual 98th percentile (EPA 2014).
c. 1-hour and annual impacts for normal conditions evaluated using the Ambient Ratio Method with 0.80 (80 percent) and 0.75 (75 percent) ratios, respectively.
d. One-hour 5-year average of annual 98th percentile (EPA 2011).
e. One-hour 5-year average of annual 99th percentile (EPA 2011).

The maximum modeled PM10 24-hour and annual impacts from steady state operation of Mission Rock are approximately 6.76 percent and 0.45 percent of the limiting standards, respectively, and are expected to occur on the southeastern boundary project fence line.

Staff believes that directly-emitted particulate matter emissions from steady state operation would cause a significant impact because they would contribute to existing violations of PM10 ambient air quality standards, and additionally that those emissions can and should be mitigated to a level of insignificance. Secondary impacts would also occur for PM10 and ozone because operational emissions of particulate matter precursors (SOx) and ozone precursors (NOx and VOC) would contribute to existing violations of these standards. The direct impacts of NO_2, CO and SO2 would not be significant because operation of the project would neither cause nor contribute to a violation of these standards. Mitigation should be provided for operational emissions of PM10, SOx, NOx, and VOC to reduce PM10 and ozone impacts.

Startup/Shutdown Event Modeling Impact Analysis

NOx and CO emissions are usually higher during startup and shutdown events than during steady state operation as the combustion turbine emissions are higher during the short periods of unsteady state operation for startup and shutdown and the SCR and oxidation catalyst control systems are not functioning at their peak efficiency

immediately upon startup or during shutdown. In the AFC, the applicant stated that testing of the fire pump (30 minutes in any one hour) would not take place during startup of the turbines, so their one-hour NO_2 and CO impacts do not include the fire pump (The fire pump was included for the 8-hour CO startup conditions). However, the VCAPCD did include the fire pump engine during startup and shutdown of the turbines in the PDOC modeling impact assessment. PDOC Appendix G, Air Quality Impact Analysis (VCAPCD 2017) shows that the impacts from turbine startup and shutdown with concurrent operation of the fire pump engine are not expected to cause an exceedance of any state or federal ambient air quality standards. **Air Quality Table 19** provides the estimated worst case impacts as a result of CTG startup and shutdown operations.

Air Quality Table 19
Startup and Shutdown Operation Maximum Impacts[a] (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
CO	One hour	86.8	1,955	2,042	23,000	9
	Eight hour	22.4	889	911	10,000	9
NO_2[b]	One hour	104.9	73.5	178.4	339	53
	One hour federal[c]	55.3	56.4	111.7	188	59

Source: CH2M2017m (TN: 217343).
a. The five CTGs were modeled using the startup emission rates presented in **Air Quality Table 13**. The fire pump engine was not included during turbine startup or shutdown periods; see PDOC Appendix G for these concurrent operations.
b. One-hour impacts for startup and shutdown conditions were evaluated using the Ozone Limiting Method (OLM) with a NO_2/NOx in-stack ratio of 0.50 and concurrent El Rio ozone data.
c. One-hour 5-year average of annual 98th percentile (EPA 2011).

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

Fumigation Modeling Impact Analysis

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

The short-term fumigation impacts (i.e. 1-hour, 3-hour, 8-hour, and 24-hour) were evaluated using EPA Model AERSCREEN (version 15181). Since AERSCREEN is a single point source model, the middle turbine stack (Turbine 3) was modeled using a unitized emission rate of 1.0 g/s. These unitized fumigation impacts were compared to the maximum AERSCREEN impacts for Turbine 3 for flat terrain and the maximum

AERMOD impacts from the screening analysis (both of which also used a unitized emission rate of 1.0 g/s). The maximum fumigation impacts are less than the AERSCREEN maxima predicted to occur under normal dispersion conditions anywhere offsite and the AERMOD screening analysis impacts for Turbine 3.

Since all short-term fumigation impacts are less than the maximum overall AERSCREEN and AERMOD screening impacts, no further analysis of additional short-term averaging times is required. Thus, the overall refined modeling analysis impacts are conservative with respect to fumigation impacts, so no pollutant-specific fumigation results are presented.

Commissioning Phase Modeling Impact Analysis

As described in the Proposed Initial Commissioning Emissions section, under the Project Description and Proposed Emissions section above, because emissions of NOx, CO, and PM10 are expected to be higher during commissioning activities compared to routine operation, the applicant has proposed to limit commissioning to two turbines at a time while the remaining turbines are non-operational. The fire pump engine would not be operated during commissioning of the CTGs (as limited by Condition of Certification **AQ-62**).

Air Quality Table 11 provides the maximum initial commissioning emissions for Phase 1 and Phase 2 of the commissioning activities. **Air Quality Table 20** provides the commissioning phase maximum impacts.

Air Quality Table 20
Commissioning Phase Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
NO_2[b]	One hour	214.6	73.5	288.1	339	85
	One hour Federal[c]	72.7	56.4	129.1	188	69
CO	One hour	522	1,955	2,477	23,000	11
	Eight hour	178	889	1,067	10,000	11

Source: CAL2017a (TN: 215570).
Notes:
a. Two CTGs were modeled for the Phase 1 and Phase 2 commissioning activities using the corresponding emission rates provided in **Air Quality Table 11**. The wet surface air condenser was also modeled as part of the commissioning phase impacts.
b. NO_2 one-hour impacts for commissioning activities were evaluated using the Ozone Limiting Method with a NO_2/NOX stack emissions ratio of 0.50 (50 percent) and concurrent El Rio ozone data.
c. Since commissioning occurs for a period much less than one year, the highest 98th percentile 1-hour commissioning impact was averaged with the four highest 98th percentile 1-hour startup impacts for the 1-hour NO_2 NAAQS comparison.

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

Secondary Pollutant Impacts

Ozone Impacts

Ozone is not directly emitted from stationary or mobile sources, but the contaminant is formed as the result of chemical reactions in the atmosphere between precursor air

pollutants. The primary ozone precursors are NOx and VOC, which interact in the presence of sunlight and warm air temperatures to form ozone.

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

PM2.5 Impacts

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

U.S. EPA issued guidance on December 2, 2016 that requires secondary PM2.5 impacts be addressed for sources seeking PSD permits. This guidance provides several methods, or tiers, that can be used to analyze secondary PM2.5 impacts; including refined air dispersion modeling methods. Mission Rock has been determined to not require PSD permitting, so this type of modeling analysis is not required.

Impact Summary

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

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

Applicant's Proposed Mitigation

Emission Controls

As discussed in the **Proposed Operation Emission Controls** section, the applicant proposes the use of natural gas and best combustion practices, along with water injection in the turbine combustors to limit NOx production and a selective catalytic reduction (SCR) system with aqueous ammonia for post-combustion NOx control, CO catalyst for CO and VOC control, and operate exclusively on pipeline quality natural gas to limit turbine emission levels. The PDOC (VCAPCD 2017) provides the following BACT emission limits, for the combustion turbine:

- NOx emissions controlled to 2.5 ppmvd corrected to 15 percent oxygen, averaged over any one-hour period except during startups/shutdowns and combustor tuning;
- VOC, also known as ROC, emissions controlled to 2.0 ppmvd at 15 percent O_2 (**AQ-29** limits ROC to 1.0 ppmvd at 15 percent O_2);
- CO emissions controlled to 4.0 ppmvd at 15 percent O_2 for any one-hour period;
- PM10/PM2.5 emissions would be limited to 2 lb/hr;
- SOx emissions would be based on natural gas consisting of 0.75 grains/100 standard cubic feet (scf);
- NH_3 emissions limited to 5 ppmvd at 15 percent O_2 and 3.78 lbs/hr.

CO emissions do not require BACT; however, the applicant's use of a CO catalyst would control CO emissions to 4.0 ppmvd at 15 percent O_2 (one-hour rolling average, excluding startup/shutdown) and 4.97 lbs/hr. The District's PDOC conditions include provisions to meet these control emissions limits during normal operation and provide separate emission limits for startup, shutdown, and initial commissioning consistent with Mission Rock emission levels shown in **Air Quality Tables 11** and **12**.

Emission Offsets

District Rule 26.2 Section B requires NOx and VOC offsets for a new, replacement, modification, or relocated emissions unit. This rule requires offsets if net emissions increase more than 5 tons per year for NOx or VOC and more than 15 tons per year for PM10 and SOx. The net emissions increase from Mission Rock would exceed the 5 ton per year threshold for NOx but would not exceed the thresholds for VOC, PM10 and Sox. Therefore, NOx offsets are required, but SOx, PM10 and VOC offsets are not required per District rules.

The District's PDOC requires the owner to identify necessary NOx offsets before they would issue the Final Determination of Compliance (FDOC) and Condition of Certification **AQ-2** requires these offsets to be surrendered prior to operation of the new turbines.

Adequacy of Proposed Mitigation

Emission Controls

As discussed in the **Proposed Operation Emission Controls** section, the applicant proposes: (1) to employ water injection in the turbine combustors to limit NOx production and a selective catalytic reduction (SCR) system with aqueous ammonia for post-combustion NOx control, (2) an oxidation catalyst for CO and VOC control, and (3) to operate exclusively on pipeline quality natural gas to limit combustion turbine emission levels. These emission controls meet the District rules and are adequate.

Emission Offsets

Rule 26.2.B details the emission offset requirements for new, replacement, modified, or relocated emissions units. The district's PDOC shows that Mission Rock exceeds the offset threshold for NOx only. The facility would be required to provide NOx offsets at a tradeoff ratio of 1.3 to 1 as per Rule 26.2.B.2.a. The District's PDOC requires the owner to identify necessary offsets prior to the issuance of the Final Determination of Compliance (FDOC) and Condition of Certification **AQ-2** requires these offsets to be surrendered prior to operation of the new turbines. While this is adequate for meeting the district rules and regulations for compliance with laws, ordinances, regulations and standards (LORS) which establish minimum emissions thresholds as described above, the Energy Commission normally requires additional mitigation for all non-attainment pollutants and their precursors for CEQA purposes without consideration of minimum thresholds.

In Data Response 19 (TN: 220917), the Applicant stated that further reductions of non-attainment pollutants (VOC, PM10/PM2.5, and SOx) from Mission Rock, beyond those required by the VCAPCD rules and regulations for LORS purposes, could be achieved through participation in funding in either the Carl Moyer Memorial Air Quality Standards Attainment Program (CMP) or the Clean Air Fund (CAF). VCAPCD would direct the funding to a variety of approaches within these programs based on the VCAPCD's priorities for achieving maximum, cost effective results from administration of the CMP and the CAF.

Although a list of emission reductions and mitigation funding options were outlined in Data Response 19 (TN: 220917), staff must receive a public filing of the proposed offset package from the applicant before staff can evaluate the adequacy of the proposed emissions offsets for CEQA purposes. This package should include a feasible and specific approach for achieving the necessary reductions, including the specific quantities of such reductions being proposed for mitigation. These mitigation measures need to be enforceable through conditions of certification.

Staff Proposed Mitigation

For purposes of CEQA and as similar to previous projects, staff recommends that the Energy Commission require mitigation of all non-attainment criteria pollutants (i.e. ozone and PM10) and all non-attainment criteria pollutant precursor (i.e. NOx, SOx, PM2.5, and VOCs). Staff continues to work with the applicant, Mission Rock, LLC and VCAPCD to identify, quantify, and enforce specific mitigation measures. These mitigation measures will need to be established ahead of publication of the Final Staff Assessment (FSA).

CUMULATIVE IMPACTS

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

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

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

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

Summary of Projections

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

The adopted air quality plans are summarized below:

- **2016 Ventura County Air Quality Mitigation Plan (Adopted February 14, 2017)**

  http://www.vcapcd.org/pubs/Planning/AQMP/2016/Final/Final-2016-Ventura-County-AQMP.pdf

- **2015 Ventura County Triennial Assessment and Plan Update 2012-2014 (Adopted November 2015)**

- http://www.vcapcd.org/pubs/Planning/2015-Final-Triennial-Assessment.pdf

- **2014 Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Revision (Adopted June 10, 2014)**

  http://www.vcapcd.org/pubs/Planning/AQMP/2014_RACT_SIP_Final_wFR.pdf

2016 Ventura County Air Quality Management Plan (AQMP)
Pursuant to the federal Clean Air Act Amendments (CAAA) of 1990, the 2016 Ventura County Air Quality Management Plan (AQMP) presents Ventura County's: 1) strategy to attain the 2008 federal 8-hour ozone standard; 2) attainment demonstration for the federal 8-hour ozone standard; and, 3) reasonable further progress demonstration for the federal 8-hour ozone standard.

The CAAA established clean air plan requirements for areas that exceed the National Ambient Air Quality Standards (NAAQS). These areas, called nonattainment areas, must develop and implement clean air plans to attain the NAAQS by specified dates. Clean air plans, also called Air Quality Management Plans, Nonattainment Plans, or State Implementation Plans (SIP), describe how an area, such as Ventura County, will attain the NAAQS.

Building on previous Ventura County AQMPs, the 2016 AQMP presents a combined local and state clean air strategy based on concurrent reactive organic gases (ROG) and nitrogen oxides (NOx) emission reductions to bring Ventura County into attainment of the 2008 federal 8-hour ozone standard. ROG and NOx emitted by both anthropogenic and natural sources react in the atmosphere to produce photochemical smog. Ventura County was the first area in the nation to institute such a dual-emissions strategy for meeting ozone standards.

The 2016 AQMP control strategy consists of a local component implemented by the Ventura County Air Pollution Control District (APCD or District) and a combined state and federal component implemented by the ARB and EPA. The local strategy includes emission control measures carried forward from previous Ventura County clean air plans plus new and further study emission control measures. It also includes a transportation conformity budget that sets the maximum amount of on-road motor vehicle emissions produced while continuing to demonstrate progress towards attainment.

2015 Ventura County Triennial Assessment and Plan Update 2012-2014

The CCAA requires that once every three years, beginning in 1994, the state's air districts are to assess their progress towards attaining the state clean air standards, determine the amount of emission reductions achieved over each three-year period, correct any deficiencies in meeting progress goals, and incorporate new data and projections into their state clean air plans. The most recent triennial assessment period is 2012 – 2014. The California Health and Safety Code (CH&SC) sections 40924 and 40925 require that triennial assessments include the following:

- Improvement in air quality based upon air quality indicators identified by the ARB (CH&SC section 40924);
- Population-related, industry-related, and vehicle-related emissions growth (CH&SC section 40925);
- Control measures adopted by the District (CH&SC sections 40924 and 40925); and,
- Review of "every feasible measure" (CH&SC Section 40925).

2014 Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Revision

The federal Clean Air Act Amendments (CAAA) of 1990, give the states primary responsibility for achieving the national ambient air quality standards (NAAQS). The NAAQS are set by the U.S. Environmental Protection Agency (EPA) as the maximum concentrations in the atmosphere for specific air contaminants to protect public health and welfare. The principal mechanism at the state and local level for complying with the CAAA is the State Implementation Plan (SIP). A SIP outlines the programs, actions, and commitments a state will carry out to implement its responsibilities under the CAAA.

The federal Clean Air Act requires that ozone nonattainment areas implement reasonably available control technology (RACT) for sources that are subject to Control Techniques Guidelines issued by EPA and for "major sources" of VOC and NOx, which are ozone precursors. RACT is defined as the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. The VCAPCD's 2014 RACT SIP lays out the evaluation process and RACT requirements.

Localized Cumulative Impacts

Mission Rock and other reasonably foreseeable projects could cause impacts that would be locally combined and these future projects would introduce stationary sources that are not already included in the "background" concentrations. Reasonably foreseeable future projects (including modifications to existing facilities) in the area 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. Stationary source projects located up to six miles from the proposed project site usually need to be included in the analysis. Background conditions take into account the effects of existing non-stationary (mobile and area) sources.

The applicant submitted a public record request to the VCAPCD to obtain emissions data for new and existing facilities within eight miles of the proposed Mission Rock site that have submitted permit applications to the air district for consideration in the cumulative impacts assessment (CH2M2016g, TN: 215103). From the list of sources provided by the district, a screening analysis was done to determine which sources were appropriate for inclusion in the cumulative impact assessment.

Energy Commission staff have worked with the air district to identify all projects that have submitted, within the last year of monitoring data, new applications for an authority to construct (ATC) or permit to operate (PTO) and applications to modify an existing PTO within six miles of the project site. Project changes that were implemented more than one year ago are assumed to be already represented by background monitoring data. Based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for non-reactive pollutant concentrations between two stationary emission sources. Staff generally analyzes all new or modified sources that would cause a net increase of 5 tons or more per modeled criteria pollutant.

Staff's work with the air district determined that there are no reasonably foreseeable projects (projects that have received construction permits but are not yet operational, and those that are in the permitting process or can be reasonably expected to be in permitting in the near future) within a six mile radius that would cause a net increase of 5 tons or more of any modeled criteria pollutant. Therefore, no sources were identified at this time to be included in the cumulative modeling analysis.

PROJECT EMISIONS COMPARISON

The generation of electricity using any fossil fuel, including natural gas, produces criteria air pollutants. Mission Rock would emit criteria air pollutant emissions. It is important to carefully evaluate the potential impacts of those emissions, as we have done in our air quality impact analysis, to ensure that the project would not cause or contribute to health-based ambient air quality standards. But it is also important to look at the proposed project's emissions in context of other local emission sources and emissions inventories which represent total emissions in an area.

VENTURA COUNTY POWER PLANT EMISSIONS

There are several power plants in Ventura County, and one power plant in Santa Barbara County that is in the local electricity capacity sub-area[2] associated with the Mission Rock project. Each power plant is dispatched (ordered into operation at part-load or full load) by the California Independent System Operator based on each facility's contractual requirements, relative efficiency, interconnection point (e.g., 230 kV vs 69 kV), or availability (e.g., maintenance or forced outage status). In other words, the operation and emissions of Mission Rock would be somewhat independent from operation or non-operations and emissions of another power plant. However, because the public views power plants and their "smoke stacks" as equivalent, we have provided a table of the emission and operations of the local power plants for comparison and context, and are not suggesting a relative dispatch order.

Air Quality Table 21
Ventura County and Moorpark Sub-Area Power Plants Operating in 2015 and Proposed Fossil Power Plants

	Capacity (MW)	Capacity Factor (%)	Energy Generation (MWh)	NOx Emissions (tpy)	NOx Emissions (lbs/MWh)	PM10[d] Emissions (tpy)	PM10 Emissions (lbs/MWh)
Existing Power Plants							
Mandalay Units 1-2[a]	430	7%	247,656	10.9	0.09	3.45	0.03
Ormond Beach[a]	1,613	3%	405,013	23.1	0.11	5.5	0.03
McGrath[a]	49	10%	41,517	7.2	0.35	2.2	0.11
Ellwood[a]	57	1%	6,446	5.7	1.77	0.3	0.09
Mandalay Unit 3[b]	139	0.4%	4,284	17.0	7.95	0.75	0.35
Proposed Fossil Power Plants							
Puente[c]	262	11%	252,463	15.1	0.11	4.9	0.04
Mission Rock[c]	275	11%	264,990	10.9	0.08	5.0	0.04

Notes:

a. Actual energy generation and facility emissions from QFER and ARB data for 2015 operations.
b. Actual energy generation from QFER data for 2015 operations. NOx and PM10 emissions are based on the Unit 3 hourly emissions rates provided in the Puente Power Project, Final Staff Assessment (TN: 214712), Air Quality section, multiplied by the hours of operation.
c. Energy generation is based on the estimated reasonable worst case capacity factor of 11 percent for both Puente and Mission Rock as established in the Puente Power Project Final Staff Assessment (TN: 214712). NOx and PM10 emissions are based on permitted annual emissions scaled to 11 percent capacity factor.
d. PM10 and PM2.5 are nearly one in the same for natural gas combustion processes.

Nitrogen Oxides (NOx)

Mandalay 3 has been offered up as a bridge to an alternative preferred resource future, it is comparatively higher emitting and inefficient. Mandalay Unit 3 is 100 times more polluting of NOx than Mission Rock. On top of that it is has a thermal efficiency of

[2] The Moorpark Sub-Area is a subset of the larger Big Creek/Ventura local capacity area.

approximately 11% (≈30,000 Btu/kWh). This would be a fuel consumption rate over three times as much as Mission Rock per MWh (and therefore over three times as much CO_2 per MWh) compared to Mission Rock. Ellwood similarly has been suggested as a bridge to the future, but its NOx emissions are 22 times greater than Mission Rock. Even the more recent simple-cycle McGrath CTG emits 4 times as much NOx per MWh as Mission Rock.

NOx emissions rates (in lbs/MWh) of the modern power plants are similar to the NOx emission rates of the legacy boilers. While the boiler units (Mandalay and Ormond Beach) are less efficient than the newer simple-cycle combustion turbines, they were retrofitted with highly efficient catalytic emission controls and the NOx emission rates compare quite well to Mission Rock. While the legacy boilers are being retired in order to comply with the state's policy regarding once-through-cooling, and because they have incredibly long start-up times compared to a modern simple-cycle CTG, there would be no change in local power generation NOx rates and emissions if the legacy boilers were replaced by Mission Rock. However, if the boilers retire and the Mandalay 3, Ellwood and McGrath simple cycles are used to replace Ventura/Moorpark sub-area local capacity and generation rather than Mission Rock, it is likely that local NOx generation emissions would increase dramatically to provide the same amount of local generation.

Particulate Matter

Mandalay Unit 3 is nearly 10 times more polluting on a PM10 per MWh basis than Mission Rock. Ellwood similarly has been suggested as a bridge to a mixed resource future, but its PM10 emission rates are more than 2 times greater than Mission Rock. Even the more recent simple-cycle McGrath CTG emits nearly 3 times as much PM10 per MWh as Mission Rock.

PM10 emissions rates (in lbs/MWh) of the modern power plants are similar to the PM10 emission rates of the legacy boilers. While the boiler units (Mandalay and Ormond Beach) are less efficient than the newer simple cycle combustion turbines, boilers generally emit less PM per MWh because of differing combustion air mixture ratios and combustion by-product residence times. While the legacy boilers are being retired in order to comply with the State's policy regarding Once-Through-Cooling, and because they have incredibly long start-up times compared to a modern simple cycle CTG, there would be no significant difference in local power generation PM10 rates and emissions if the legacy boilers were replaced by Mission Rock. However, if the boilers retire and the Mandalay 3, Ellwood and McGrath simple cycles are used to replace Ventura/Moorpark sub-area local capacity and generation rather than Mission Rock, it is likely that local PM10 generation emissions would increase.

VENTURA COUNTY EMISSIONS INVENTORIES

To understand how daily emissions from Mission Rock would compare to other sources, staff evaluated emissions inventories for Ventura County. The Air Resources Board (ARB) has an emission inventory broken down by specified source categories in a certain geographical area and within a specified time span. Staff generated 2015 emissions data from ARB's Almanac Emission Projection Data (ARB 2017c) for Ventura County. The data shows that in Ventura County, mobile sources are the leading source

of NOx, CO, and SOx emissions, while area-wide sources are the leading source of PM10 and PM2.5 emissions.

Air Quality Table 22 provides the estimated annual average daily emissions by source type and category and compares them to the annual average daily permit-level emissions from Mission Rock. Actual emissions from Mission Rock and these other source categories are likely to vary, but it is useful to compare value to understand the mix of emission sources in an air basin.

Air Quality Table 22
Estimated Ventura County Emissions in 2015
Annual Average Daily Emissions (Tons/Day)

Source Type	Category	Tons/Day				
		CO	NOx	SOx	PM10	PM2.5
Stationary	Fuel Combustion [a]	2.53	1.65	0.06	0.18	0.18
	Waste Disposal [b]	0.27	0.09	0.04	0.03	0.02
	Cleaning and Surface Coatings [c]	0	0	0	0.04	0.04
	Petroleum Production [d]	0.15	0.03	0.02	0.01	0.01
	Industrial Processes [e]	0.24	0.06	0.05	0.32	0.12
Area-Wide	Miscellaneous Processes [f]	14.4	1.27	0.05	14.22	3.87
Mobile	On-Road Motor Vehicles [g]	58.56	13.75	0.1	1.23	0.57
	Other Mobile Sources [h]	49.2	28.82	0.88	1.16	1.08
County-wide Total		125.35	45.65	1.15	17.19	5.89
Mission Rock Energy Center [i]		0.09	0.08	0.01	0.04	0.04

Source: ARB's Almanac Emission Projection Data (ARB 2017c) and CAL2015a (TN207151-1).
Notes:

a. Includes cogeneration, oil and gas, manufacturing, food and agricultural processing, service and commercial, and other.
b. Includes sewage treatment, landfills, incinerators, and other.
c. Includes laundering, degreasing, coatings and related process solvents, printing, adhesives and sealants, and other.
d. Includes oil and gas production, and petroleum marketing.
e. Includes chemical, food and agriculture, mineral processes, metal processes, wood and paper, electronics, and other.
f. Includes residential fuel combustion, farming operations, construction and demolition, paved road dust, unpaved road dust, fugitive windblown dust, fires, managed burning and disposal, cooking, and other.
g. Includes a range of passenger vehicles, trucks, buses, and other.
h. Includes aircraft, trains, ocean going vessels commercial harbor craft, recreational boats, off-road recreational vehicles, off-road equipment, and farm equipment.
i. Annual average daily emissions equals total annual permitted emissions divided by 365.

Air Quality Table 22 shows that daily NOx emissions from Mission Rock are expected to be about 0.08 tons per day (tpd). This is 1/600th of the total NOx emissions in the county, or about 0.18 percent of the county NOx total inventory. The daily PM10 emissions from Mission Rock are expected to be about 0.04 tpd. This is 1/400th of the total PM10 emissions in the county, or about 0.23 percent of the county PM10 total inventory.

Mobile Sources

As shown in **Air Quality Table 22**, mobile sources are the leading source of NOx, CO, and SOx emissions in Ventura County. **Air Quality Table 23** compares the annual average daily emissions from Mission Rock to the daily emissions generated by on-road mobile sources in Ventura County.

Air Quality Table 23
Comparison of Mission Rock and Mobile Source Emissions in Ventura County (Tons/Day)

	Tons/Day[a]		
	CO	**NOx**	**SOx**
On-Road Motor Vehicles	58.56	13.75	0.1
Mission Rock Energy Center	0.09	0.08	0.01
Percent of Mobile Source Emissions	0.15%	0.58%	10.00%

Sources: ARB 2017c and CAL2015a (TN207151-1).
Notes:
a. Annual average daily emissions in tons per day.

If the county on road mobile sector would realize approximately 1 percent reduction in NOx emissions (1 percent of 13.75 tpd NOx is 0.14 tpd NOx, which is greater than the expected NOx emissions from Mission rock of 0.08 tpd), it would more than offset the addition of Mission Rock NOx emission to the air basin. If you attempted to achieve all the NOx emission reductions from the automobile fleet registered in the county (580,000 as of December 31, 2015), you could change out 5,800 cars, or about 1 percent, with electric cars and possibly achieve the 1 percent reduction in NOx from the mobile sector (the sector is a mix of autos, trucks and motorcycles).

Area-Wide Miscellaneous Processes

As shown in **Air Quality Table 22**, Area-Wide Miscellaneous Processes are the largest contributor of PM10 and PM2.5 in Ventura County. Miscellaneous Processes Include residential fuel combustion, farming operations, construction and demolition, dust generated from paved and unpaved roads, fugitive windblown dust, fires, managed burning and disposal, cooking, and other processes. **Air Quality Table 24** shows the total emissions from each category under the Area-Wide Miscellaneous Processes (including the subcategories under residential fuel combustion) and compares them to the annual average daily emissions for Mission Rock.

Air Quality Table 24
Comparison of Mission Rock and Area-Wide Miscellaneous Processes
Daily Emissions in Ventura County (Tons/Day)

Area-Wide Miscellaneous Processes - Subcategories	Tons/Day	
	PM10	PM2.5
Residential Fuel Combustion	1.89	1.82
Subcategory of Residential Fuel Combustion – Wood Stoves	0.62	0.59
Subcategory of Residential Fuel Combustion – Fireplaces	1.18	1.13
Subcategory of Residential Fuel Combustion – Space Heating	0.06	0.06
Subcategory of Residential Fuel Combustion – Water Heating	0.04	0.04
Subcategory of Residential Fuel Combustion – Cooking	0.01	0.01
Subcategory of Residential Fuel Combustion – Other	0.01	0.01
Farming Operations	0.6	0.09
Construction and Demolition	4.67	0.47
Paved Road Dust	3.21	0.48
Unpaved Road Dust	1.58	0.16
Fugitive Windblown Dust	1.68	0.29
Fires	0.02	0.01
Managed Burning and Disposal	0.16	0.14
Cooking	0.41	0.41
Other (Miscellaneous Processes)	0	0
Total	14.22	3.87
Mission Rock	0.04	0.04
Percent of Total Miscellaneous Emissions	0.25%	0.93%

Source: ARB's Almanac Emission Projection Data (ARB 2017c) and CAL2015a (TN207151-1).

Air Quality Table 24 shows that daily PM10 emissions from using residential wood burning stoves in Ventura County are 16 times greater than the expected daily emissions from Mission Rock. This means that you could change out about 6 percent of the wood burning stoves used in Ventura County with electric stoves and possibly achieve the PM10 emission reductions needed to offset the expected daily emissions from Mission Rock.

ENVIRONMENTAL JUSTICE

As discussed in the **Environmental Justice** section of this staff assessment, **Environmental Justice Figure 1** shows the presence of an Environmental Justice (EJ) population based on race and ethnicity within a six-mile radius around the proposed Mission Rock project. **Environmental Justice Figure 2** and **Table 3** show the presence of an EJ population based on low income.

There are a number of farm workers within the vicinity of the proposed site at any given time. There are approximately 51 agricultural jobs/farm workers within a one mile radius of the project site concentrated north of the project site. There are approximately 4,398 agricultural jobs/farm workers within a six mile radius of the project site concentrated

primarily northeast and south of the project site. In comparison there are 25,877 agricultural jobs/farm workers in Ventura County (US Census 2014).

In carrying out this analysis, staff evaluated whether Mission Rock is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards and whether mitigation measures proposed for Mission Rock would be adequate to lessen the potential impacts to a level of insignificance.

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, regardless of income status or race (including EJ populations and farm workers). 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.

The applicant has not yet fully identified mitigation for Mission Rock's potential air quality impacts. Full implementation of the recommended air quality conditions of certification would generally result in mitigation to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level, including impacts to the EJ population and farm workers within the six-mile radius of the project site. However, these conditions have not yet been completed as the applicant has not yet identified specific mitigation. Assuming adequate mitigation would be implemented, air quality impacts to the EJ population and farm workers would be less than significant. Nonetheless, until the air quality impacts are fully mitigated, the project's air quality impacts on the EJ population and whether the impacts would be disproportionate cannot be determined.

COMPLIANCE WITH LORS

The District issued a Preliminary Determination of Compliance (PDOC) for Mission Rock on October 13, 2017. A 45-day public comment period commenced with the public notice of the issuance of the PDOC. The project requires offsets for nitrogen oxides (NOx) that have not yet been identified. The PDOC includes conditions required to ensure compliance with all applicable requirements, including the NOx emission offset requirements of District Rule 26.2.B. At the end of the 45-day public comment period, and once the applicant has met the NOx emission offset requirements, the District will issue a Final Determination of Compliance (FDOC). The District's PDOC conditions are presented below in the conditions of certification, and will be updated as needed in the Final Staff Assessment. These conditions of certification ensure the project's compliance with all applicable LORS.

FEDERAL

The District's PDOC was issued pursuant to federal New Source Review (NSR) requirements. The permit conditions contained in the PDOC and conditions of certification contained in this Preliminary Staff Assessment (PSA) ensure that the project's emissions would be below federal Prevention of Significant Deterioration (PSD) permit trigger levels. The conditions require the project owner to submit an application for a Title V Part 70 Permit and a Title IV Acid Rain Permit.

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

Title 40 CFR Part 51 (New Source Review)

The federal New Source Review (NSR) permitting program protects air quality and ensures that new or modified projects are as clean as possible, and that advances in pollution control occur concurrently with industrial expansion. The NSR program requires operating permits be enforced and requires Best Available Control Technology (BACT) and offsets.

The District's PDOC is being issued pursuant to VCAPCD Rule 26.9, New Source Review - Power Plants. The PDOC contains BACT and offset requirements. The conditions of certification contained in this PSA ensure compliance with NSR requirements.

Title 40 CFR 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)

The proposed 220-brake-horsepower (bhp) John Deere Emergency Diesel Engine (or equivalent) is subject to the Compression Ignition Internal Combustion Engine NSPS (Subpart IIII).

This section contains emission standards for the engine. The emergency engine is required to comply with the emission standards for non-road compression ignition engines. For engines in this power range and model year, these standards require the engine be certified to standards of 4.0, 3.5 and 0.20 g/kW-Hr (3.0, 2.6, 0.15 g/bhp-hr) for NMHC+NOx, CO and PM respectively. Conditions of certification **AQ-66**, **AQ-67**, and **AQ-68** ensure compliance with these standards.

Additional requirements include the use of a non-resettable hour meter, fuel standards met by using an ultra-low sulfur diesel fuel, operational requirements met by following manufacturer's procedures and record keeping provisions. Maintenance and readiness testing is limited to 50 hours per year. Conditions of certification **AQ-62** and **AQ-63** ensure compliance with these requirements.

Title 40 CFR Part 60, Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

The proposed GE LM6000-PG-Sprint gas turbines are subject to this subpart because the heat input for each turbine is 566.2 MMBTU/Hr, which is more than the 10 MMBTU/Hr trigger. This subpart sets emission limits for NOx and SO_2 and requires the turbines be operated and maintained in a manner of good air pollution control practices at all times. Additionally, this subpart requires installation, certification, and maintaining a continuous emission monitoring system (CEMS) and defines source test requirements for the turbines.

Section 60.4320 requires turbines to meet the applicable NOx standard of 25 ppmvd at 15% O_2 or 1.2 lb/MW-Hr when operating at or above 75% peak load and 96 ppmvd at 15% O_2 or 4.7 lb/MW-hr when operating below 75% of peak load. Condition of Certification **AQ-29** ensures compliance with this requirement.

Section 60.4330 requires the turbines to meet the SO_2 emission limits of either 0.90 lbs-SO_2/MWh discharge based on gross output or 0.060 lbs- SO_2/MMBTU potential in the fuel. The natural gas sulfur content of the fuel will be limited to 0.75 grain per 100 scf (0.002098 lbs- SO_2/MMBTU). This sulfur content is lower than the fuel sulfur standard. Therefore, the new turbines will comply with this section. Condition of Certification **AQ-20** ensures compliance with this requirement.

The conditions of certification in this PSA ensure compliance with the Standards of Performance for Stationary Combustion Turbines, including all emission limits, CEMS installation, certification, and maintenance requirements, and all source test requirements for the turbines.

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

The Standards of Performance for Greenhouse Gas Emissions states that newly constructed or reconstructed stationary combustion turbines that supply its design efficiency or 50 percent, whichever is less, times its potential electric output or less as net-electric sales on either a 12-operating month or a 3-year rolling average basis and combusts more than 90% natural gas on a heat input basis on a 12-operating-month rolling average basis shall meet a CO_2 emission standard of 50 kg CO_2 per gigajoule (GJ) of heat input (120 lb CO2/MMBTU).

The District's PDOC calculations show that Mission Rock would be a non-base load unit and would be subject to the Best System of Emission Reduction (BSER) established for that subcategory. Therefore, the turbines are limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU or less. Condition of Certification **AQ-61** ensures compliance with this standard.

See Air Quality Appendix Air-1 for more discussion of greenhouse gas issues.

Title 40 CFR Part 64 (Compliance Assurance Monitoring [CAM])

The Compliance Assurance Monitoring (CAM) regulation applies to emission units at a major stationary source required to obtain a Title V permit, which use control equipment to achieve a specified emission limit. The section is intended to provide "reasonable assurance" that the control systems are operating properly to maintain compliance with the emission limits. CAM is applicable to the turbine because the potential to emit for the stationary source exceeds the major source thresholds (25 tons per year for ROC or NOx, and 100 tons per year for PM, SOx, or CO) for NOx. The turbine will have a continuous emissions monitor (CEMs) installed which will comply with this requirement.

40 CFR Part 70 (State Operating Permit Programs)

Title V requires the facility owner to submit a Part 70 permit application to the VCAPCD prior to operating the new turbines and emergency fire pump engine. Title V requires all sources subject to these regulations to have a permit to operate that assures compliance by the source with all applicable requirements. Condition of certification **AQ-1** contains requirements to ensure compliance with the Title V federal permit requirements.

40 CFR Part 72 (Permits Regulation)

A Title IV Acid Rain permit is required for the proposed turbines because they are new fossil fuel fired combustion devices used to generate electricity for sale with an electrical output greater than 25 MW. Condition of certification **AQ-1** contains requirements to ensure compliance with the Acid Rain permit requirements.

STATE

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

The District has evaluated compliance of the 220 bhp John Deere Emergency Diesel Engine with Air Toxic Control Measure (ATCM) requirements under Title 17 of the California Code of Regulations. The District has determined with their PDOC permit conditions that the engine will comply with the ATCM requirements.

LOCAL

The District issued a PDOC (VCAPCD 2017), which states that the project is expected to comply with all applicable District rules and regulations. The District rules and regulations specify the emissions control and offset requirements for new sources such as the CTGs and fire pump engine proposed for Mission Rock. Best Available Control Technology would be implemented, and ERCs would be required for NOx based on the permitted emission levels for this project. Compliance with the District's new source requirements would ensure that the project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans.

Rule 26.2 - New Source Review – Requirements

The New Source Review (NSR) requirements include ensuring the emissions units are equipped with the current Best Available Control Technology (BACT), requiring emissions offsets for pollutants that exceed specified amounts, and ensuring the units would not cause a violation of any ambient air quality standard.

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

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

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

PM10: Pipeline quality natural gas

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

Condition of Certification **AQ-29** ensures that the turbines would meet these BACT emission limits. Condition of Certification **AQ-49** requires the facility owner to submit design parameters and details of the SCR and oxidation catalyst emission control systems for each CTG including percent emissions reduction control efficiencies.

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

The District's PDOC requires the owner to identify necessary offsets prior to the issuance of the Final Determination of Compliance (FDOC) and **AQ-2** requires the offsets to be surrendered prior to operation of the new turbines.

Rule 26.6 - New Source Review – Calculations

Rule 26.6 defines the emission increase for new emission units as the potential to emit of the new emission units. The CTGs and the emergency diesel fire pump engine are new emission units. Therefore, the emission increases are equal to the potential to emit of the new equipment.

The increase in NOx emissions from the proposed five CTGs and emergency fire pump engine will be offset using Emission Reduction Credits (ERCs). The facility will be required to provide NOx offsets at a tradeoff ratio of 1.3 to 1 as per Rule 26.2.B.2.a.

Rule 26.7 - New Source Review – Notification

This rule specifies the cases in which notification shall be provided of the Air Pollution Control Officer's preliminary decision to grant an Authority to Construct, or issue a Certificate of Emission Reduction Credit. In addition, this rule specifies the process by which such notification shall be made. Mission Rock would result in an increase in NOx emissions over the 15.0 tons per year threshold and therefore a public notice will be required. The notification shall be published in a newspaper of general circulation in Ventura County. The notice period shall provide at least 30 days for the public to submit written comments regarding the decision. The VCAPCD shall consider all comments made during the comment period.

Rule 26.9 - New Source Review - Power Plants

This rule applies to Mission Rock as an Application for Certification has been submitted to the California Energy Commission (Docket No. 15-AFC-02). The VCAPCD conducted a Determination of Compliance review as required by Rule 26.9. As required by Rule 26.9.F, a public notice and comment period shall be conducted as required by Rule 26.7. Compliance with Rule 26.9 is confirmed.

Rule 26.11 - New Source Review – ERC Evaluation at Time of Use

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

Pursuant to Rule 26.2.B.2.d and Rule 26.11.C.6 these NOx offsets are not required to be surplus at the time of use since the most recent report of the Rule 26.11 Annual Equivalency Demonstration Program, dated April 1, 2017, shows a positive balance for NOx ERCs (VCAPCD 2017).

Rule 26.13 - New Source Review - Prevention of Significant Deterioration (PSD)

The post-project potentials to emit from all new units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

The potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore, Rule 26.13 is not applicable and no further PSD analysis is required.

Rule 29 – Conditions on Permits

This rule requires the VCAPCD to apply conditions to permits which are necessary to assure that a stationary source and all emissions units at the stationary source will operate in compliance with applicable state and federal emission standards and with Ventura County APCD rules, including permit conditions required by Rule 26, New Source Review. Conditions may include restrictions on emissions limits, production rates, fuel use rates, raw material use rates, hours of operation or other reasonable conditions to insure that the permitted emission limits are not exceeded.

The conditions contained in the PDOC and this staff assessment assure compliance with all applicable federal, state and Ventura County APCD rules and limit the stationary source permitted emissions in the units of tons per year and pounds per hour.

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

This rule contains the requirements for federal Title V Operating Permits. The owner of Mission Rock will be required to submit a Part 70 permit application to the VCAPCD prior to operating the new turbines and emergency fire pump engine. Condition of Certification **AQ-1** ensures compliance with this rule.

Rule 34 – Acid Deposition Control

This rule applies to any acid rain source, as defined in Title IV of the 1990 Federal Clean Air Act Amendments. A Title IV Acid Rain permit is required for the proposed turbines because they are new fossil fuel fired combustion devices used to generate electricity for sale with an electrical output of greater than 25 MW. The Title IV Acid Rain permit is required pursuant to 40 CFR Part 72, which is incorporated into VCAPCD Rule 34, Acid Deposition Control. Condition of Certification **AQ-1** requires that the owner of Mission Rock submit the Title IV Acid Rain permit application prior to operating the new turbines.

Rule 50 – Opacity

Rule 50 limits visible emissions to an opacity of less than 20 percent (Ringelmann No. 1), as published by the United States Bureau of Mines. Visible emissions are not expected under normal operation from the turbines, emergency diesel fire pump engine, or ammonia tank.

Rule 51 – Nuisance

Rule 51 requires that a person not 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 cause, or have a natural tendency to cause injury or damage to business or property. The new equipment, including the turbines, emergency diesel fire water pump engine, and ammonia tank, are not expected to create nuisance problems, such as smoke or odors.

Rule 54 - Sulfur Compounds

Rule 54 requires compliance with sulfur dioxide (SO_2) emission limits of 300 ppmv and compliance with ground level concentration limits of SO_2 (0.25 ppmv averaged over 1 hour, 0.04 ppmv averaged over 24 hours, and 0.075 ppmv 1-hour average design value). The combustion of PUC quality natural gas results in compliance with the 300 ppmv emission limit. The district's modeling analysis showed that the facility impacts are expected to be less than the respective standards, therefore the facility is expected to comply with this rule.

Rule 55 – Fugitive Dust

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

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

Rule 57.1 - Particulate Matter Emissions from Fuel Burning Equipment

The rule requires that particulate matter emissions from the turbine not exceed 0.12 pounds per MMBTU of fuel input. At the manufacturer's guaranteed particulate matter emission rate of 2.0 pounds per hour and the maximum fuel input rate of 566.2 MMBTU/Hr, the particulate matter emissions are 0.004 lb per MMBTU, which is significantly less than the Rule 57.1.B limit of 0.12 lb per MMBTU. Therefore, compliance with the rule is expected.

Rule 57.1 does not apply to internal combustion engines, pursuant to Section C.1 of the rule. Therefore, the rule does not apply to the new emergency fire pump engine.

Rule 64 - Sulfur Content of Fuels

Rule 64.B.1 prohibits the combustion of gaseous fuels that contain sulfur compounds in excess of 50 grains per 100 cubic feet (788 ppmv), calculated as hydrogen sulfide at standard conditions. The turbines will be required to burn only Public Utilities Commission (PUC) regulated natural gas which meets this requirement.

Rule 64.B.2 prohibits the combustion of liquid fuels that have a sulfur content in excess of 0.5 percent by weight. The emergency engine will only use ARB-certified diesel fuel that meets this limit.

Rule 74.9 - Stationary Internal Combustion Engines

The facility is proposing to install a 220 bhp John Deere emergency diesel fired internal combustion engine. The engine will provide emergency firewater capabilities for the protection of life and property. The facility has indicated that it will be operated less than or equal to 50 hours per year for non-emergency use such as engine maintenance and readiness testing. A non-resettable elapsed hour meter is required by Rule 74.9.D.3. The facility will submit the engine annual operating hours to the VCAPCD per Rule 74.9.F.2.

Rule 74.23 - Stationary Gas Turbines

The proposed gas turbines are subject to the 9 x E/25 ppmvd @ 15% oxygen NOx limit of Rule 74.23.B.1. (E is the Unit Efficiency Percent and is not less than 25 percent as defined in the rule.) The NOx BACT limit of 2.5 ppmvd @ 15% oxygen, as limited by **AQ-29**, is more stringent than the Rule 74.23 limit as described above. Rule 74.23 requires an annual source test to verify compliance with the NOx limit. The required NOx continuous emission monitor will also verify compliance with the NOx emission limit.

The turbines are also subject to the 20 ppmvd ammonia (NH_3) limit of Rule 74.23.B.4. The proposed ammonia limit of 5 ppmvd @ 15% oxygen, as limited by Condition of Certification **AQ-29**, is more stringent than the Rule 74.23 limit. Compliance with this ammonia limit will be verified by an annual source test.

This rule also describes the monitoring systems requirements, source test requirements, and record keeping requirements. The conditions of certification in this PSA and the District's PDOC would ensure compliance with all portions of this rule.

Rule 103 - Continuous Monitoring Systems

The requirements of Rule 103 include the installation, calibration, and maintenance of the Continuous Emission Monitors (CEMs) system in accordance with the specifications for electric power generating units in 40 CFR, Part 75, Continuous Emission Monitoring, Subpart C, Operation and Maintenance Requirements, which includes by reference Appendix A to Part 75, Specifications and Test Procedures, and Appendix B to Part 75, Quality Assurance and Quality Control Procedures.

The applicant proposes that each of the new GE LM6000 Turbines will be equipped with NOx, CO, and O2 Continuous Emission Monitors (CEMs). Condition of Certification **AQ-6** ensures compliance with this rule.

CONCLUSIONS

STAFF CONCLUDES THAT:

- The project is expected ultimately to meet the requirements of Rule 26, "New Source Review", and all other applicable Ventura County APCD rules and regulations, including applicable state and federal requirements that the Ventura County APCD enforces. However, the project does not currently meet the emission offset requirements of Rule 26.2. The project requires offsets for nitrogen oxides (NOx) at a tradeoff ratio of 1.3 to 1 that have not yet been identified. The PDOC includes conditions that require the applicant to identify the ERCs that would be used to satisfy the emission offset requirements ahead of issuance of the Final Determination of Compliance (FDOC). Therefore, it is expected the project will comply with all applicable LORS before publication of the Final Staff Assessment (FSA).

- The project's operation would not cause new exceedances of any NO_2, PM2.5, SO_2 or CO ambient air quality standards; therefore, the project's direct operation NOx, PM2.5, SOx, and CO emission impacts are not significant.
- The project's direct, or secondary, emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are potentially significant if unmitigated. Therefore, to comply with CEQA requirements, all nonattainment emissions (i.e. PM10) and nonattainment precursor emissions (i.e. NOx, SOx, PM2.5, and VOC) need to be mitigated. Staff continues to work with the applicant and VCAPCD to establish appropriate mitigation measures. In order for air quality staff to recommend approval of the project, these measures will need to be included in the FSA.
- Staff recommends inclusion of the District's PDOC conditions as Conditions of Certification **AQ-1** through **AQ-71**. Staff will present any revision to the District's DOC conditions in the Final Staff Assessment that will follow the publication of the District's Final DOC.
- The project's construction activities, if unmitigated, would likely contribute to significant adverse PM10 and ozone impacts. Therefore, staff recommends Conditions of Certification **AQ-SC1** to **AQ-SC5** to mitigate these potential impacts.
- Mission Rock would replace less efficient power plant generation in the Big Creek - Ventura Local Reliability Area (LRA), reducing the associated GHG emissions and facilitating retirement of units at the Mandalay Generating Station and Ormond Beach Generating Station which are aging, and high GHG-emitting resources in the LRA. See **Air Quality Appendix Air-1** for more discussion.
- Staff has considered the demographics of the population surrounding the site (see Socioeconomics Figure 1 and Socioeconomics Table 3 in the **Socioeconomics** section of this PSA). Full implementation of the recommended air quality conditions of certification would generally result in mitigation to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level, including impacts to the EJ population and farm workers within the six-mile radius of the project site. However, these conditions have not yet been completed as the applicant has not yet identified specific mitigation. Assuming adequate mitigation would be implemented, air quality impacts to the EJ population and farm workers would be less than significant. Nonetheless, until the air quality impacts are fully mitigated, the project's air quality impacts on the EJ population and whether the impacts would be disproportionate cannot be determined.

Staff proposes a number of conditions of certification that are in addition to the permit conditions that the District has proposed. Condition of Certification **AQ-SC6** provides the administrative procedure requirements for project modifications. Condition of Certification **AQ-SC7** is a requirement for the project owner to submit quarterly Operation Reports at the end of each calendar quarter. Condition of Certification **AQ-SC8** establishes appropriate guidelines on what would be considered a significant change to the project. This condition is compatible with many air district rules and regulations which already have established mechanisms approved by ARB and U.S. EPA to make minor changes that do not involve significant change to existing monitoring, reporting, or recordkeeping requirement or require a case by case

determination of any emission limitation. This would allow the CPM to approve administrative changes (such as typographical errors, facility name or owner) and other minor changes. The condition requires the project owner to apply for approval of the change and grants authority for the CPM to approve the change before the change would become effective.

Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in **Air Quality Appendix AIR-1**. Mission Rock, as a peaking project with an enforceable operating capacity factor of less than 60 percent, is not subject to the requirements of SB1368, California's Emission Performance Standard. Additionally, Mission Rock would be permitted to operate with an annual capacity factor of approximately 28.5%. Mission Rock would be a non-base load unit and the turbines would be limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU or less. The project would be licensed to emit as much as 0.372 million metric tons of carbon dioxide equivalent emissions and therefore it would be subject to California's cap-and-trade regulation and mandatory state and federal GHG reporting requirements.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends the following conditions of certification to address the impacts associated with the construction and operation of the Mission Rock Energy Center (Mission Rock). These conditions include Energy Commission staff-proposed conditions and District proposed conditions from the PDOC with appropriate staff-proposed verification language added for each condition.

CEC Staff Conditions

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

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

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

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

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

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

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

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

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

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

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

g) 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.

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

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

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

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

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

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

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

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

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

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

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

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

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

Verification: The AQCMM shall provide to the CPM information in the MCR to include:

1. A summary of all actions taken to maintain compliance with this condition;
2. Copies of any complaints filed with the District in relation to project construction; and
3. Any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

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

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

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

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

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

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

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

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

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

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

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

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

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

f) Construction equipment will employ electric motors when feasible.

Verification: The AQCMM shall include in a table in the Monthly Compliance Report 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, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained;

C. The Tier rating of any diesel-fueled equipment of 50 hp or more, and

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

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

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

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

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

AQ-SC8 The project owner shall comply with all staff (**AQ-SC**) and district (**AQ**) conditions of certification. The CPM, in consultation with the District, may approve any change to a condition of certification regarding air quality, as a staff-approved modification, provided that: (1) the project remains in compliance with all applicable laws, ordinances, regulations, and standards, (2) the requested change clearly will not cause the project to result in a significant environmental impact, (3) no additional mitigation or offsets will be required as a result of the change, (4) no existing daily, quarterly, or annual permit limit will be exceeded as a result of the change, and (5) no increase in any daily, quarterly, or annual permit limit will be necessary as a result of the change.

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

AQ-SC9 During operation of the wet surface air cooler (wet SAC), the PM10 emission rate shall not exceed 10.88 lb/day and the drift eliminator drift rate shall not exceed 0.001%.

Compliance with the PM10 daily emission limit shall be demonstrated as follows:

PM10 lb/day = circulating water recirculation rate * total dissolved solids concentration in the blowdown water * design drift rate.

The project owner shall perform cooling tower recirculating water quality testing at least once during any quarter when the cooling tower has operated, or shall provide for continuous monitoring of conductivity as an indicator for total dissolved solids content.

Verification: The project owner shall submit documentation from the selected wet SAC vendor that verifies the drift efficiency to the CPM at least thirty (30) days prior to commencement of construction of the wet SAC. The project owner shall submit to the CPM cooling tower recirculating water quality tests or a summary of continuous monitoring results and daily recirculating water flow in the Quarterly Operation Report (**AQ-SC7**).

If the project owner uses continuous monitoring of conductivity as an indicator for total dissolved solids content, the project owner shall submit data supporting the calibration of the conductivity meter and the correlation with total dissolved solids content at least once each year in a Quarterly Operation Report (**AQ-SC7**).

District Preliminary Determination of Compliance Proposed Permit Conditions (VCAPCD 2017)

Five (5) GE LM6000-PG-Sprint Combustion Turbine Generators (CTGs)

AQ-1. Prior to completion of construction, the project owner shall submit an application for a Title V Part 70 Permit for the Mission Rock Energy Center. The application shall also include the Title IV Acid Rain Permit application, VCAPCD Permit to Operate application, and all applicable supplementary forms and filing fees. (Rules 10, 33, 34)

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

AQ-2. Prior to operation of the new CTG's, project owner shall surrender NOx Emission Reduction Credits (ERCs) in the amount of 36.57 tons per year. (Rule 26.2)

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

AQ-3. The project owner shall identify the ERC Certificates to be used to satisfy the NOx emission offset requirements above prior to the issuance of the Final Determination of Compliance (FDOC). These NOx ERC Certificates shall comply with the quarterly profile check of Rule 26.2.B.4 and Rule 26.6.F. (Rules 26.2 and 26.6)

Verification: The project owner shall submit to the CPM and District, the information necessary to identify the ERC Certificates prior to the issuance of the Final Determination of Compliance (FDOC).

AQ-4. The combustion turbine generator (CTG) lube oil vents and the electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents to no greater than 5% opacity, except for no more than three minutes in any one hour. (Rule 26.2)

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

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

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

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

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

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

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

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

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

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

VCAPCD, the ARB, and the EPA. (Rule 103, 40 CFR Part 60 Subpart KKKK, and 40 CFR Part 75)

Verification: No verification required.

AQ-10. In accordance with the applicable sections of 40 CFR Part 60 Appendix F, the CO CEMS shall be audited at least once each calendar quarter by conducting cylinder gas audits (CGA) or relative accuracy audits (RAA). CGA or RAA may be conducted during three of four calendar quarters, but no more than three calendar quarters in succession. The NOx and O_2 CEMS shall be audited in accordance with the applicable requirements of 40 CFR Part 75. The District and CPM shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District upon request. (Rule 103, 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 RAA and source test protocols, and RAA source test reports within the timeframes specified in Condition **AQ-11.**

AQ-11. For the CO CEMS, the project owner shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F at least once every four calendar quarters. For the NOx and O_2 CEMS, the project owner shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 75, Appendix B at least once every two calendar quarters unless the project owner achieves 7.5% or below relative accuracy. If the project owner meets the incentive of 7.5% or better relative accuracy, then the project owner shall perform a RATA once every four calendar quarters. For the CO CEMS, the project owner shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. (Rule 103, 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 this condition**.**

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

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

AQ-13. The project owner shall maintain permanent continuous monitoring records, in a form suitable for inspection, for a period of at least five (5) years. Such records shall be made available to the Air Resources Board or the VCAPCD upon request. The report shall include the following:

1. Time intervals of report,

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

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

4. Emission Measurements,

5. Net megawatt-hours produced, and

6. Calculated NOx emission limit of 40 CFR Part 60, Subpart KKKK. (Rule 103)

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

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

1. Time intervals of report,

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

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

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

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

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

AQ-15. For the purposes of 40 CFR Part 60, Subpart KKKK, excess emissions shall be defined as any unit operating period in which the 4-hour rolling average NOx concentration exceeds the applicable concentration limit, or alternatively as elected by the project owner, the 4-hour rolling average NOx emission rate exceeds the applicable lb/MWh emissions rate limit, as defined in Part 60.4320, Table 1. The 4-hour rolling average NOx concentration limit for any operating hour is determined by the arithmetic average of 25 ppmvd at 15% O_2 for each hour in which the unit operated above 75% of peak load for the

entire hour, and 96 ppmvd at 15% O_2 for each hour in which it did not. The 4-hour rolling NOx lb/MWh emission limit for any operating hour is determined by the arithmetic average of 1.2 lb/MWh for each hour in which the unit operated above 75% of peak load for the entire hour, and 4.7 lb/MWh for each hour in which it did not. The 4-hour rolling average is the arithmetic average of the average NOx concentration in ppm measured by the CEMS for a given hour (corrected to 15 percent O2) or lb/MWh if elected by the project owner, and the average NOx concentrations or lb/MWh emission rates during the three unit operating hours immediately preceding that unit operating hour. A period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NOx or O_2. (40 CFR Part 60 Subpart KKKK)

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

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

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

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

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

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

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

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

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

AQ-20. Each CTG shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with sulfur content no greater than 0.75 grains of sulfur compounds (as sulfur) per 100 dry scf of natural gas. (Rules 26.2 and 64, 40 CFR Part 60 Subpart KKKK)

Verification: The project owner shall submit the quarterly fuel sulfur content values, as verified by **AQ-21**, in the Quarterly Operation Reports (**AQ-SC7**) and make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

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

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

AQ-22. Startup is defined as the period beginning with turbine initial firing and ending when the turbine meets the pounds per hour and ppmvd emission limits in Condition No. 29 below (Condition of Certification **AQ-29**) for normal operation. Shutdown is defined by the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Unplanned load change is defined as the automatic release of power from the turbine and the subsequent restart. For an unplanned load change, the loss of power during the release must exceed forty (40) percent of the turbine rating. Startup, shutdown, and unplanned load change durations shall not exceed 60 minutes (1 hour) for a startup, 60 minutes (1 hour) for a shutdown, and 60 minutes (1 hour) for an unplanned load change, per occurrence. For failed start-ups, each restart shall begin a new exemption period. (Rules 26.2, 29, and 74.23)

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

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

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

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

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

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

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

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

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

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

ROC = 1.36 lbs,

NOx (as NO_2) = 11.65 lbs,

PM10 = 2.00 lbs,

SOx (as SO_2) = 1.19 lbs, and

CO = 7.99 lbs

For the purpose of this condition, all PM10 emissions are assumed to be PM2.5 emissions.

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

Compliance with the ROC and PM10 emission limits shall be verified by CTG

manufacturer's emission data. Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit. Compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the CEMS missing data procedures required by Permit Condition No. 55 shall be implemented. (Rules 26.2, 29, and 74.23)

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

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

ROC = 1.60 lbs,

NOx (as NO_2) = 5.54 lbs,

PM10 = 2.00 lbs,

SOx (as SO_2) = 1.19 lbs, and CO = 6.03 lbs

For the purpose of this condition, all PM10 emissions are assumed to be PM2.5 emissions.

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

Compliance with the ROC and PM10 emission limits shall be verified by CTG manufacturer's emission data. Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit. Compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the CEMS missing data procedures required by Permit Condition No. 55 shall be implemented. (Rules 26.2, 29, and 74.23)

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

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

ROC = 0.71 pounds per hour and 1.0 ppmvd @ 15% O_2,

NOx (as NO_2) = 5.10 pounds per hour and 2.5 ppmvd @ 15% O_2,

PM10 = 2.00 pounds per hour,

SOx (as SO_2) = 1.19 pounds per hour,

CO = 4.97 pounds per hour and 4 ppmvd @ 15% O_2,

Ammonia (NH3) = 3.78 pounds per hour and 5 ppmvd @ 15%O_2.

For the purpose of this condition, all PM10 emissions are assumed to be PM2.5 emissions.

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

Compliance with the ROC, NOx, PM10, CO, and NH_3 emission limits shall be verified by initial and annual source testing as required below. Compliance with the SOx emission limit shall be verified by complying with the natural gas sulfur content limit of this permit. Compliance with the NH_3 limits shall also be verified by monitoring the ammonia injection rate as required below. In addition, compliance with the NOx and CO emission limits shall be verified by continuous emissions monitors (CEMS) as required by this permit. If the CEMS is not operating properly, as required below, the CEMS missing data procedures required by Permit Condition No. 55 below shall be implemented. (Rules 26.2, 29, and 74.23)

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

AQ-30. Emissions rates from each CTG during the commissioning period shall not exceed the following limits in pounds per hour:

ROC = 3.0 pounds per hour per turbine,

NOx (as NO_2) = 68.0 pounds per hour per turbine, and

CO = 117.33 pounds per hour per turbine.

No more than two (2) CTGs shall be operated simultaneously during the commissioning period.

Emissions rates from all of the CTGs combined during the commissioning period shall not exceed the following limits in tons per year. A year is defined as any twelve (12) month consecutive period.

ROC = 0.82 tons per year,

NOx (as NO_2) = 10.33 tons per year, and

CO = 22.14 tons per year.

The commissioning period is the period of time commencing with the initial startup of the turbine and ending after 213 hours of turbine operation, or the

date the project owner notifies the District and CPM the commissioning period has ended. For purposes of this condition, the number of hours of turbine operation is defined as the total unit operating minutes during the commissioning period divided by 60.

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

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

AQ-31. Annual emissions from each CTG shall not exceed the following limits in tons per year. A year is defined as any twelve (12) month consecutive period.

ROC = 0.99 tons per year,

NOx (as NO_2) = 5.62 tons per year,

PM10 = 2.50 tons per year,

SOx (as SO_2) = 1.48 tons per year, and

CO = 6.46 tons per year.

For the purpose of this condition, all PM10 emissions are assumed to be PM2.5 emissions.

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

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

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

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

Verification: The project owner shall provide emissions data to demonstrate compliance with this condition as part of each Quarter Operations Report to account for the previous twelve consecutive calendar months (**AQ-SC7**).

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

Verification: No verification required.

AQ-33. Each calendar month in a twelve (12) consecutive calendar month rolling emissions calculation will commence at the beginning of the first day of the month. The twelve consecutive calendar month rolling emissions total to determine compliance with the annual tons per year emissions limits shall be compiled for each and every twelve consecutive calendar month rolling period. (Rules 26.2 and 29)

Verification: No verification required.

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

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

AQ-35. Within 90 days after the completion of the commissioning period for each combustion turbine, the project owner shall conduct an Initial Emissions Source Test at the exhaust of each turbine to determine the ammonia (NH_3) emission concentration to demonstrate compliance with the ammonia concentration and mass emission rate limits. After the initial source test, the

NH_3 emissions source test shall be conducted on an annual basis (no less than once every 12 months).

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

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

AQ-36. Within 90 days after the completion of the commissioning period for each combustion turbine, the project owner shall conduct an Initial Emissions Source Test at the exhaust of each turbine to demonstrate compliance with the ROC, NOx, PM10, and CO emission limits of Condition No. 29 of this DOC (Condition of Certification **AQ-29**). The source test shall be conducted over the expected operating range of the turbine including, but not limited to, minimum and full load modes. This source test shall demonstrate compliance with the following short term emission limits during normal operation: ROC = 1.0 ppmvd @ 15% O_2 and 0.71 pounds per hour, NOx = 2.5 ppmvd @ 15% O_2 and 5.10 pounds per hour, PM10 = 2.0 pounds per hour, and CO = 4 ppmvd @ 15% O_2 and 4.97 pounds per hour. The project owner shall submit the source test results to the District and CPM within 45 days of conducting tests.

After the initial source test, the ROC, NOx, PM10, and CO emissions source testing shall be conducted on an annual basis (no less than once every 12 months). (Rules 26.2, 29, and 74.23)

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

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

the District and CPM, within 45 days after completion of a source test or RATA performed by an independent source test contractor, a final test report shall be submitted to the District and CPM for review and approval. (Rule 102)

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

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

ROC: EPA Methods 18 or 25,

NOx: EPA Methods 7E or 20,

PM10: EPA Method 5 (front half and back half) or EPA Method 201A and 202,

CO: EPA Methods 10 or 10B,

O_2: EPA Methods 3, 3A, or 20,

Ammonia (NH_3): BAAQMD ST-1B.

For the purpose of this condition, all PM10 emissions are assumed to be PM2.5 emissions.

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

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

AQ-39. An initial and annual source test and a periodic NOx and CO Relative Accuracy Test Audit (RATA) shall be conducted on each CTG and its CEMS to demonstrate compliance with the NOx and CO emission limits of this permit and applicable relative accuracy requirements for the CEMS systems using VCAPCD approved methods. The annual source test and the NOx CEMS RATAs shall be conducted in accordance with the applicable RATA

frequency requirements of 40 CFR Part 75, Appendix B, Sections 2.3.1 and 2.3.3. The annual source test and the CO CEMS RATAs shall be conducted in accordance with the applicable RATA frequency requirements of 40 CFR Part 60, Appendices B and F. The initial and annual RATA may be conducted during the initial and annual emission source tests required above and shall be conducted in accordance with a protocol complying with all the applicable requirements of an approved source test protocol. (Rule 74.23 and 103, 40 CFR Part 60, and 40 CFR Part 75)

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

AQ-40. Relative Accuracy Test Audits (RATAs) and all other required certification tests shall be performed and completed on the NOx CEMS in accordance with applicable provisions of 40 CFR Part 75 Appendix A and B and 40 CFR Part 60 Subpart KKKK; and on the CO CEMS in accordance with applicable provisions of 40 CFR Part 60 Appendix B and F. (Rules 74.23 and 103, 40 CFR Part 60 Subpart KKKK, 40 CFR Part 60, and 40 CFR Part 75)

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

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

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

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

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

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

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

AQ-44. The project owner shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time,

length and reason for reduced load periods, total hours of operation, amount of natural gas consumed, and duration of each start-up, each shutdown, and each unplanned load change time period. (Rules 26 and 74.23)

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

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

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

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

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

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

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

AQ-48. The number of annual operating hours (including startup and shutdown hours) for each CTG shall not exceed 2,500 hours per year. This limit also includes commissioning hours for each turbine. A year is defined as any twelve (12) month consecutive period.In addition to the limit above, the number of startup periods occurring shall not exceed 150 startups per year per turbine and the duration of the startup periods shall not exceed 75 hours per year per turbine. The number of shutdown periods occurring shall not exceed 150 shutdowns per year per turbine and the duration of the shutdown periods shall not exceed 22.5 hours per year per turbine. The limits on startups and shutdowns per year do not include startups and shutdowns during commissioning as the commissioning period has separate and independent emission limits.

Each CTG shall be equipped with an operating, non-resettable, elapsed hour meter.

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

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

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

Verification: The project owner shall submit to the CPM for review and District for approval final selection, design parameters and details of the SCR and oxidation catalyst emission control systems at least 90 days prior to the start of construction of the SCR or oxidation catalyst.

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

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

AQ-51. Except during periods when the ammonia injection system is being tuned or one or more ammonia injection systems is in manual control for compliance with applicable permit conditions, the automatic ammonia injection system serving the SCR system shall be in operation in accordance with manufacturer's specifications at all times when ammonia is being injected into the SCR system. Manufacturer specifications shall be maintained on

site and made available to the District and CPM upon request. (Rules 26 and 74.23)

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

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

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

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

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

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

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

d. Hourly mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds;

e. Cumulative mass emissions of oxides of nitrogen (NOx) calculated as NO_2 in each startup and shutdown period, in pounds;

f. Daily mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds;

g. Calendar monthly mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds;

h. Rolling 1-hour average and rolling 4-hour concentration of oxides of nitrogen (NOx) corrected to 15% oxygen, in parts per million (ppmvd);

i. Rolling 1-hour average and rolling 4-hour average of oxides of nitrogen (NOx) calculated as NO_2 emission rate, in pounds per megawatt-hour (MWh);

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

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

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

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

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

o. Calendar month, calendar year, and rolling twelve (12) calendar-month period mass emissions of carbon monoxide (CO), in tons;

p. Average concentration of oxides of nitrogen (NOx) and carbon monoxide (CO) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd), averaged over each unit operating hour;

q. Average emission rate in pounds per hour of oxides of nitrogen (NOx) calculated as NO_2 and pounds per hour of carbon monoxide (CO) during each unit operating hour.

(Rules 26, 29, 74.23, 103 and 40 CFR Part 60, Subpart KKKK)

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS protocol, as required by **AQ-54**, which includes description of the methods of compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-54. No later than 90 calendar days prior to initial startup of the CTGs, the project owner shall submit a CEMS protocol to the District and CPM, for written approval that shows how the CEMS will be able to meet all of the monitoring requirements of this permit. (Rules 74.23 and 103)

Verification: The project owner shall submit to the CPM for review and the District for approval a CEMS operating protocol at least 90 days prior to the initial startup of each combustion turbine.

AQ-55. When the NOx CEMS is not recording data and the CTG is operating, hourly NOx emissions for purposes of rolling twelve (12) calendar-month period emission calculations shall be determined in accordance with 40 CFR Part 75 Subpart C. Additionally, when the CO CEMS is not recording data and the CTG is operating, hourly CO emissions for purposes of rolling twelve (12) calendar-month period emission calculations shall be determined using CO emission factors to be determined from source test emission factors and hourly fuel consumption data. Emission calculations used to determine hourly emission rates shall be reviewed and approved by the District and CPM, in writing, before the hourly emission rates are incorporated into the CEMS emissions data. (Rules 26.2 and 29 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-SC7)**.

AQ-56. Each CTG shall be equipped with continuous monitors to measure, calculate, and record unit operating days and hours and the following operational characteristics and operating parameters (Rule 74.23):

a. Date and time;

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

c. Total heat input to the combustion turbine based on the natural gas higher heating value (HHV) during each unit operating minute, in Million British Thermal Units Per Hour (MMBTU/Hr);

d. Higher heating value (HHV) of the fuel on an hourly basis, in Million British Thermal Units Per Standard Cubic Foot (MMBTU/SCF);

e. Stack exhaust gas temperature during each unit operating minute, in degrees Fahrenheit;

f. Combustion turbine energy output during each unit operating minute in megawatts hours (MWh)

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition and within the timeframes specified in **AQ-58** and the project owner shall make the site available for inspection of records and equipment required in this condition by representatives of the District, ARB, and the Energy Commission.

AQ-57. The values of the above operational characteristics and parameters shall be reduced to hourly averages. The monitors shall be installed, calibrated, and maintained in accordance with a turbine operation monitoring protocol, which may be part of the CEMS protocol, approved by the District and CPM, which shall include any relevant calculation methodologies. The monitors shall be in full operation at all times when the combustion turbine is in operation. Calibration records for the continuous monitors shall be maintained on site and made available to the District and CPM upon request. (Rule 74.23)

Verification: The project owner shall submit to the CPM for review and the District for approval a turbine operation monitoring protocol in compliance with this condition and within the timeframes specified in **AQ-58** and the project owner shall make the site available for inspection of records and equipment required in this condition by representatives of the District, ARB, and the Energy Commission.

AQ-58. At least 90 calendar days prior to initial startup of the CTGs, the project owner shall submit a CTG operating parameter monitoring protocol to the

District and CPM for written approval. This may be part of the CEMS protocol. (Rule 74.23)

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

AQ-59. Within thirty (30) calendar days after the end of the commissioning period for the CTGs, the project owner shall submit a written report to the District and CPM. This report shall include, a minimum, the date the commissioning period ended, the startup and shutdown periods, the emissions of NOx and CO during startup and shutdown periods, and the emissions of NOx and CO during steady state operation. This report shall also detail any CTG or emission control equipment malfunction, upset, repairs, maintenance, modifications, or replacements affecting emissions of air contaminants that occurred during the commissioning period. All of the following continuous monitoring information shall be reported and averaged over each hour of operation, except for cumulative mass emissions. (Rules 26.2 and 29):

a. Concentration of oxides of nitrogen (NOx) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd);

b. Concentration of carbon monoxide (CO) uncorrected and corrected to 15% oxygen, in parts per million (ppmvd);

c. Percent oxygen (O_2) in the exhaust gas;

d. Mass emissions of oxides of nitrogen (NOx) calculated as NO_2, in pounds and tons;

e. Cumulative mass emissions of oxides of nitrogen (NOx) calculated as NO_2 in each startup and shutdown period, in pounds and tons;

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

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

h. Total heat input to the combustion turbine based on the fuel's higher heating value, in Million British Thermal Units Per Hour (MMBTU/Hr);

i. Higher Heating Value (HHV) of the natural gas fuel on an hourly basis, in Million British Thermal Units Per Standard Cubic Foot (MMBTU/SCF);

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

k. SCR catalyst temperature, in degrees Fahrenheit.

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

AQ-60. Upon request of the APCO or CPM, the hourly average information required by this permit shall be submitted in writing and /or in an electronic format approved by the District and CPM. Upon request of the District or CPM, the minute-by-minute information required by this permit shall be submitted in an electronic format approved by the District and CPM. (Rules 26.2, 74.23, and 103)

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

AQ-61. The CTGs shall comply with 40 CFR Part 60, Subpart TTTT, Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units. As defined by the annual hours of operation limits, and the natural gas fuel only requirements, of this permit, the CTG is subject to a CO_2 emission standard of 120 lb CO_2 per MMBTU, averaged over a twelve (12) operating month rolling average.

To verify compliance with this condition, as required above by this permit, the project owner shall record and maintain written monthly records of the CTG natural gas consumption and the CTG net electrical sales supplied to the utility grid.

Verification: To verify compliance with this condition, the project owner shall record and maintain written monthly records of the CTG natural gas consumption and the CTG net electrical sales supplied to the utility grid and submit to the District and CPM in the Quarterly Compliance Reports (**AQ-SC7**).

220 BHP John Deere Emergency Diesel Fire Pump Engine (or equivalent)

AQ-62. The annual hours of operation for maintenance and readiness testing of the Emergency Diesel Fire Pump Engine shall not exceed 50 hours per year. A year is defined as any twelve (12) month consecutive period. In addition, the Emergency Diesel Fire Pump Engine shall not be operated for more than 30 minutes in any rolling one (1) hour period during maintenance and readiness testing.

Operation of the engine for maintenance and readiness testing shall not occur during the turbines' commissioning period. These limits do not include emergency operation for the pumping of water for fire suppression or protection. When not being operated for maintenance or readiness testing, the emergency engine shall only be used for the emergency pumping of water for fire suppression or protection.

The engine shall be equipped with an operating, non-resettable, elapsed hour meter with a minimum display capacity of 9,999.9 hours. The project owner shall maintain a daily log to record the time of day and the duration of operation in hours and minutes. The daily log shall differentiate operation during maintenance and readiness testing from operation during emergency pumping of water for fire suppression or protection. These hours of operation records shall be compiled into a monthly total. The monthly operating hour records shall be summed for the previous twelve (12) months and reported to the District and CPM after every calendar year by February 15. (Rule 26.2, Rule 74.9 and ATCM)

Verification: The project owner shall submit to the CPM the emergency diesel engine operating data demonstrating compliance with this condition as part of the Quarterly Operation Report **(AQ-SC7)**. The monthly operating hour records shall be summed for the previous 12 months and reported to the District and CPM after every calendar year by February 15.

AQ-63. Only CARB-certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used to fuel the Emergency Diesel Fire Pump Engine. The project owner shall maintain records of diesel fuel purchases to document compliance with this condition. (ATCM)

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

AQ-64. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which are as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart as published by the United States Bureau of Mines, or 20% opacity. (Rule 50)

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

AQ-65. The emergency engine shall be EPA-certified to the applicable emissions requirements for emergency fire pump engines of 40 CFR Part 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines and the California ARB Airborne Toxic Control Measure For Stationary Compression Ignition (CI) Engines, based on the power rating of the engine and the engine model year. The ROC, NOx, and PM10 emission limits below have been applied as BACT pursuant to Rule 26.2. (Rule 26.2, NSPS IIII, and ATCM)

Verification: The project owner shall provide to the CPM for review and approval engine documentation demonstrating compliance with the condition at least 30 days prior to purchasing the engine.

AQ-66. ROC and NOx emissions from the engine shall not exceed the Emission Standard for NMHC+NOx of 3.0 g/bhp-hr. The project owner shall maintain documentation certifying that the emergency diesel fire pump engine meets this emission standard. (Rule 26.2, NSPS IIII, and ATCM)

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

AQ-67. PM10 emissions from the engine shall not exceed shall not exceed the Emission Standard for PM of 0.15 g/hp-hr. The project owner shall maintain documentation certifying that the emergency diesel fire pump engine meets this emission standard. (Rules 26.2, NSPS IIII, and ATCM)

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

AQ-68. CO emissions from the engine shall not exceed shall not exceed the Emission Standard for CO of 2.6 g/bhp-hr. The project owner shall maintain documentation certifying that the emergency diesel fire pump engine meets this emission standard. (NSPS IIII and ATCM)

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

AQ-69. The exhaust stack of the Emergency Diesel Fire Pump Engine shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. A flapper type rain cap that is open while the engine is operating may be used. (Rule 51)

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

AQ-70. The Emergency Diesel Engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. (NSPS IIII and ATCM)

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

AQ-71. The project owner shall monitor the operational characteristics of the engine as recommended by the engine manufacturer or emissions control system supplier. (NSPS IIII and ATCM)

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

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ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	ARMS/EPA Regulatory Model
AFC	Application for Certification
APCD	Air Pollution Control District (VCAPCD)
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
bhp	brake horsepower
Btu	British thermal unit
CAAQS	California Ambient Air Quality Standard
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CEM	Continuous Emission Monitor
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CTG	Combustion Turbine Generator
CPM	(Energy Commission) Compliance Project Manager
DPM	Diesel Particulate Matter
DOC	Determination Of Compliance
EPA	Environmental Protection Agency (same as U.S. EPA)
ERC	Emission Reduction Credit
GHG	Greenhouse Gas
gr	Grains (1 gr $\cong$ 0.0648 grams, 7000 gr = 1 pound)
HAP	Hazardous Air Pollutant
hp	horsepower
LAER	Lowest Achievable Emission Rate
lbs	pounds
LORS	Laws, ordinances, regulations and standards
MCR	Monthly Compliance Report

mg/m^3	milligrams per cubic meter
MMBtu	Million British thermal units
MW	Megawatts (1,000,000 Watts)
NAAQS	National Ambient Air Quality Standard
NH_3	Ammonia
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_3	Nitrates
NOx	Oxides of Nitrogen *or* Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	Oxygen
O_3	Ozone
OLM	Ozone Limiting Method
PDOC	Preliminary Determination Of Compliance
PM10	Particulate matter less than 10 microns in diameter
PM2.5	Particulate matter less than 2.5 microns in diameter
ppm	Parts per million
ppmv	Parts per million by volume
ppmvd	Parts per million by volume, dry
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
RATA	Relative Accuracy Test Audit
ROC	Reactive Organic Compound
SCCAB	South Central Coast Air Basin
scf	Standard cubic feet
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_3	Sulfate
SOx	Oxides of sulfur
U.S. EPA	United States Environmental Protection Agency
$\mu g/m^3$	Microgram per cubic meter
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile organic compounds

AIR QUALITY APPENDIX AIR-1

Greenhouse Gas Emissions

Joseph Hughes, P.E. and David Vidaver

SUMMARY

Mission Rock Energy Center (Mission Rock) is proposed as five simple cycle combustion turbine generators (CTGs), each with a clutch that would enable the facility to provide transmission line support as synchronous condenser. The facility would also host onsite batteries capable of producing 25 megawatts (MW) and 100 megawatt-hours (MWh). These attributes would produce a modular facility which could be deployed in increments of 25 MW (battery) to 55 MW (each CTG) and thus be well-suited to meet the needs for rapidly-dispatchable energy resulting from an increased reliance on solar generation. The analysis below focuses mainly on the five CTGs and the onsite diesel-fueled fire pump engine, as these are the only sources of onsite greenhouse gas emissions.

Mission Rock would be an efficient, dispatchable, modular, natural gas-fired simple-cycle power generation and battery facility with fast-start capability, but the CTGs 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 retirement of units at the Mandalay Generating Station (MGS), the Ormond Beach Generating Station, and the integration of variable-energy renewable resources. Because output from the project would displace that from less efficient natural gas-fueled generation resources, the addition of Mission Rock would contribute to a reduction in California GHG emissions and the average GHG emission rate.

Electricity for California is produced by operation of an interconnected system of generation sources that span the western U. S., British Columbia and Alberta, and the northern portion of Baja California, Mexico.[3] Operation of one power plant, like Mission Rock, affects all other power plants in the interconnected system. The relative efficiency of Mission Rock 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-fueled sources of electricity. While the Mission Rock CTGs would burn natural gas for fuel and thus would produce GHG emissions that contribute cumulatively to climate change, the facility would have a beneficial impact on system operation and facilitate a reduction in GHG emissions in several ways:

- When dispatched,[4] Mission Rock would displace less efficient (and thus higher GHG-emitting) generation. Because the project's GHG emissions per megawatt-hour (MWh) would be lower than those of the power plants that the project would

[3] This is also referred to as "the Western [transmission] grid," or "the WECC," as area-wide reliability and long-term planning for the area are the responsibility of the Western Electricity Coordinating Council.

[4] 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.

displace, the addition of Mission Rock would contribute to a reduction of California and overall Western Electricity Coordinating Council (WECC) system GHG[5] emissions and the average GHG emission rate.

- Mission Rock would replace capacity and generation provided by aging, high GHG-emitting power plants, which are slated to retire in order to comply with the State Water Resource Control Board's (SWRCB) policy restricting the use of sea water for once through cooling (OTC).
- Output from Mission Rock would displace that from less efficient generation in the California Independent System Operator (California ISO) designated Big Creek-Ventura Local Reliability Area (LRA), reducing GHG emissions associated with providing local reliability services and facilitating retirement of units at the MGS and Ormond Beach Generating Station--aging, high GHG-emitting resources--in the LRA.
- Mission Rock would provide fast start and dispatch flexibility capabilities necessary to integrate expected additional amounts of variable renewable generation[6] to meet the state's Renewable Portfolio Standard (RPS) and GHG emission reduction targets.
- Mission Rock's design includes clutches which would enable the five CTGs to perform grid stability services without combusting fuel or emitting greenhouse gases.
- Mission Rock would include an onsite battery array which could provide grid stability services. The degree to which greenhouse gases would be generated while recharging onsite batteries is undeterminable but could potentially be done using renewable energy.

[5] 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.

[6] Variable and intermittent are often used interchangeably, but variable more accurately reflects the integration issues of renewables into the California grid. Winds can slow across a wind farm or cloud cover can shade portions of a solar field, temporarily reducing unit or facility output, but not shutting down the unit or facility.

What are GHG Emissions?

The generation of electricity using any fossil fuel, including natural gas, can produce greenhouse gases (GHG), 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 consist primarily of carbon dioxide (CO_2) with much smaller amounts of nitrous oxide (N_2O), 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. While the emissions of these GHGs are small and are also more likely to be easily controlled, reused or recycled, they are documented here as some of the compounds have very high global warming potentials.[7]

Why are they Important?

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without naturally occurring GHGs, the earth's surface would be approximately 61°F (34°C) cooler (CalEPA 2006). However, fossil fuel combustion for electricity production and vehicular transportation, for example, have elevated the concentration of GHGs in the atmosphere above naturally-occurring levels. As a result, 2016 was the hottest year worldwide on record, the third consecutive year that such a record has been set. The 17-year period 2000 – 2016 has witnessed 16 of the 17 hottest years on record, the record dating back to the late 19th century (NOAA/NASA 2017).

The impacts of global warming include potential physical, economic, and social effects. These effects include inundation of areas near the coast from rises in sea level associated with the melting of land-based glacial ice sheets, exposure to more frequent and powerful climate events, changes in suitability of certain areas for agriculture, reduction in Arctic sea ice, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, earlier flowering of trees, and a substantial reduction in winter snowpack (IPCC 2007). Current estimates include a 70 to 90 percent reduction in snow pack in the Sierra Nevada; data suggests that within the next 20 years, in every season of the year, California could experience unprecedented heat, and longer and more extreme and frequent heat waves and dry periods.

In December 2009, the U.S. Environmental Protection Agency (EPA) declared that greenhouse gases (GHGs) threaten the public health and welfare of current and future generations. The California Legislature has found that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" (Cal. Health & Safety Code, sec. 38500, division 25.5, part 1).

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

How do GHG Emissions differ from Criteria Pollutants?

GHGs differ from criteria pollutants[8] in that GHG emissions from a specific project do not cause direct adverse localized human health effects. Rather, the direct environmental effect of GHG emissions is the cumulative effect of an overall increase in global temperatures, which in turn has numerous indirect effects on the environment and humans, including those enumerated above. Accordingly, staff's assessment of the impact of Mission Rock on GHG emissions focuses not only on the GHG emissions at the Mission Rock site due to its construction and operation, but also due to net changes in emissions across the electric system.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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

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

Applicable Law or Regulation	Description	Mission Rock Consistency
Federal		
40 Code of Federal Regulations (CFR) Parts 51 and 52	A new stationary source that emits more than 100,000 tons per year (TPY) of greenhouse gases (GHGs) is also considered to be a major stationary source subject to Prevention of Significant Deterioration (PSD) requirements. As of June 23, 2014, the US Supreme Court has invalidated this requirement as a sole PSD permitting trigger. However, PSD still applies to GHGs if the source is otherwise subject to PSD (for another regulated New Source Review (NSR) pollutant) and the GHG emissions exceed this value.	**Consistent:** The proposed facility is not subject to the PSD analysis for other NSR pollutants and is therefore not subject to GHG PSD analysis.
Title 40 CFR Part 60, Subpart TTTT (Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units)	This rule, effective October 23, 2015, establishes standards for emissions for carbon dioxide (CO_2) for newly constructed, modified, and reconstructed affected fossil fuel-fired electricity utility generating units (EGUs).	**Consistent:** The turbines are limited to burning natural gas resulting in a consistent emission rate of 120 lb-CO_2/MMBTU or less.

[8] Criteria pollutants include nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), respirable particulate matter (PM10), and fine particulate matter (PM2.5).

Applicable Law or Regulation	Description	Mission Rock Consistency
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 (CO2E) emissions per year. This requirement is triggered by this facility.	**Consistent:** The facility owner will submit each GHG report and certificate of representation for Mission Rock electronically in accordance with the requirements of 40 CFR Part 98 Section 98.4 and in a format specified by the Administrator. Any violation of any requirement of this part shall be a violation of the Clean Air Act.
State		
California Global Warming Solutions Act of 2006, AB 32 (Stats. 2006; Chapter 488; Health and Safety Code, sections 38500 et seq.) and SB 32 (Stats. 2016; Chapter 249; Health and Safety Code, section 38566)	This act requires the California Air Resource Board (ARB) to enact standards to reduce GHG emission to 1990 levels by 2020 and 40 percent of 1990 levels by 2030. Electricity production facilities are included. A Cap-and-Trade program became active in January 2012, with enforcement beginning in January 2013. Cap-and-Trade is expected to achieve approximately 20 percent of the GHG reductions expected under Assembly Bill (AB) 32 by 2020. As amended in 2016, ARB is to enact standards to reduce GHG emissions to 60% of 1990 levels by 2030.	**Consistent:** Mission Rock will participate in the Cap-and-Trade program.
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.)	**Consistent:** The facility owner will submit all GHG emissions data reports in compliance with the regulatory requirements via the Cal e-GGRT reporting system.
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 or otherwise investing in any baseload facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 MTCO2/MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lbs CO_2/MWh).	**Consistent:** Mission Rock would not be a base load facility so this regulation would not apply.

GREENHOUSE GAS ANALYSIS - FACILITY CONSTRUCTION AND OPERATION

Mission Rock Energy Center, LLC proposes to construct, own, and operate an electrical generating plant in Ventura County, California. The Mission Rock Energy Center (Mission Rock) would include five natural gas-fired, simple-cycle combustion turbines cumulatively rated at a nominal generating capacity of 275 megawatts (MW), co-located with battery units for the storage of electricity that can deliver an additional 25 MW/100 MWh of flexible capacity to the grid.

Project Construction

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in temporary, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. Construction of Mission Rock is expected to take 23 months and would occur in the following phases: mobilization and site preparation (months 1-3); civil improvements, including grading and excavation (months 2-8); power plant construction (months 5-12); building construction, including interconnection facilities and maintenance buildings (months 11-22); construction related to commissioning, for example, service vehicles and equipment deliveries, etc. (months 17-23).

AFC, Appendix 5.1E (CAL2015a) and Responses to Staff's Data Requests, Set 4 (Nos. 159-168) (TN: 216215) provide a detailed list of all vehicles and equipment that are expected to be used during the various phases of the construction schedule, including hours of operation and GHG emission factors for each vehicle and piece of equipment.

The GHG emissions estimates for project construction were derived by the applicant using the California Emissions Estimator Model® (CalEEMod) system and are provided in **Greenhouse Gas Table 2**. The term CO_2E represents the total GHG emissions after weighting by the appropriate global warming potential, known as carbon dioxide equivalent.

Greenhouse Gas Table 2
Mission Rock Estimated Construction Greenhouse Gas Emissions[a]

Total for 23-month period	CO_2 Equivalent ($MTCO_2E$)[b]
Onsite Off-Road Equipment and Onsite Vehicles	3,015
Offsite Worker Travel, Delivery and Haul Truck Emissions	2,139
Construction Total	**5,154**

Source: CAL2015a Appendix 5.1E (TN: TN207151-1); CH2M2017f (TN: 216215); and (TN: 217343).
Notes:
a. Total GHG emissions over the expected 23 month construction schedule.
b. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

Project Operations

Mission Rock is planning to operate as a peaking power plant and the CTGs are each proposed to operate up to approximately 2,500 hours per year, with an expected facility annual capacity factor of up to 29 percent for the CTG portion of the facility. The primary source of GHG emissions 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 combustion turbine GHG emissions.

The maximum annual CTG emissions are based on 2,500 hours of operation per CTG. These are broken down into 150 startups and 150 shutdowns and the remaining 2,402 hours and 30 minutes are assumed to be steady-state operation at 59 degrees Fahrenheit ambient temperature (ISO day). **Greenhouse Gas Table 3** shows the estimated maximum annual CO_2e emissions based on a heat rate of 561 million British thermal units per hour (MMBtu/hr) per turbine and 2,500 hours of operation per year per turbine.

Greenhouse Gas Table 3
Mission Rock Estimated Operating Greenhouse Gas Emissions

	Project Emissions (metric tonnes [a] per year)	Global Warming Potential [b]	CO_2-equivalent (MTCO2E per year)
Carbon Dioxide (CO_2)	371,806	1	371,806
Methane (CH_4)	7.01	25	175
Nitrous Oxide (N_2O)	0.70	298	209
Hexafluoride (SF_6)	0.0023	22,800	52
Maximum estimated GHG emissions – MTCO2E per year			372,242
Total MWh per year (net)			691,095
Estimated Annualized GHG Emissions Performance - MTCO2E/MWh[c]			**0.54**

Sources: CAL2015a Appendix 5.1E (TN: TN207151-1) and IPCC 2007.
Notes:
a. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
b. The global warming potential is a measure of the chemicals' warming properties and lifetime in the atmosphere relative to CO_2.The analysis uses updated global warming potential values developed by the Intergovernmental Panel on Climate Change (IPCC 2007).
c. Based on estimated combustion turbine emissions and corresponding net energy production.

The emissions totals noted above in **Greenhouse Gas Table 3** are based on the maximum permitted air quality limits, while the actual annual emissions are likely to be well below these levels based on historical data that show that peaking power plants do not operate at capacity factors near the 29 percent maximum capacity factor proposed by the applicant for permitting purposes.

Mission Rock would be a peaking facility that would not be subject to SB1368 Emission Performance Standard of 0.500 $MTCO_2$/MWh or the new federal NSPS of 0.454 $MTCO_2$/MW gross. The estimated operating efficiency for the CTGs are expected to be approximately 0.539 $MTCO_2$/MWh net, and 0.520 $MTCO_2$/MWh gross. However, this

performance is an estimate; real performance may be somewhat better or worse than this depending on the actual operating conditions.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses the cumulative effects of GHG emissions caused by both construction and operation. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation.

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) guidelines provide three factors for lead agencies to consider when assessing the significance of impacts for the analysis of GHG emissions impacts (CEQA Guidelines, tit. 14, §15064.4).

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an Environmental Impact Report (EIR) must be prepared for the project.

Staff evaluates the emissions of a project in the context of the electricity sector as a whole and the Assembly Bill (AB) 32 Scoping Plan implementation efforts for the sector, including the Cap-and-Trade regulation that implements the state's primary approach to reducing GHG emissions from the electricity sector. The Energy Commission's assessment approach does not include a specific numeric threshold of significance for GHG emissions; rather the assessment is completed in the context of how the project would affect the electricity sector's emissions based on its proposed role and its compliance with applicable regulations and policies.

CONSTRUCTION IMPACTS

Staff determined that the small GHG emission increases from construction activities would not be significant for several reasons. First, staff is recommending a condition of certification in the **Waste Management** section (**WASTE-4**) that requires construction wastes to be recycled as much as possible during Mission Rock construction. Second, the intermittent emissions during the construction phase are not ongoing during the life of the project. Additionally, control measures that staff recommends to address criteria pollutant emissions, such as limiting idling times and requiring, as appropriate,

equipment that meets the diesel-fueled engine Tier 4 emissions standards, would further minimize greenhouse gas emissions to the extent feasible. The use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that are expected to be part of future Air Resources Board (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 below in "**Net GHG Emissions Impact of Mission Rock Operation**" since the evaluation of these effects must be done by considering the project's role(s) in the integrated electricity system. In summary, these effects include reducing the operation and greenhouse gas emissions from the older, existing power plants; potentially displacing local electricity generation; the penetration of renewable resources; and accelerating generation retirements and replacements, including facilities currently using once-through cooling. Additionally, operation GHG emissions impacts are mitigated through compliance with the state's Cap-and-Trade regulation, which is designed to reduce electricity sector GHG emissions to meet AB 32 statewide GHG emissions reduction goals.

CUMULATIVE IMPACTS

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

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

AVENAL PRECEDENT DECISION

Staff has determined that Mission Rock would be consistent with all three main conditions in the precedent decision regarding GHG emissions established by the Avenal Energy Project's Final Energy Commission Decision (not increase the overall system heat rate for natural gas plants, not interfere with generation from existing or new renewable facilities, and ensure a reduction of system-wide GHG emissions).

NET GHG EMISSIONS IMPACT OF MISSION ROCK OPERATION - DAVID VIDAVER

ENERGY DISPLACEMENT AND CHANGES IN GHG EMISSIONS

An assessment of the impact of a new power plant on electricity system-wide GHG emissions must begin with the understanding that electricity generation and demand must be in balance at all times; the energy provided by any new generation resource simultaneously displaces exactly the same amount of energy from an existing resource or resources.[9] The GHG emissions produced by Mission Rock (or any other new facility) are thus not incremental additions to system-wide emissions, but are offset by reductions in GHG emissions from those generation resources whose output is displaced.

At renewable penetration levels of less than 33 percent, output from new natural gas-fired generation facilities such as Mission Rock displaces output from existing generators[10] in a very straightforward fashion. Natural gas-fired power plants are dispatched (called upon to generate electricity) by their owners or the balancing authority[11] whenever they are a cheaper source of energy and the ancillary services[12] provided than an alternative, i.e., when they displace a more expensive resource, if not the most expensive resource, that would otherwise be called upon to operate. The costs of dispatching a power plant are largely the costs of fuel, plus variable operations and maintenance (O&M) costs, with the former representing the lion's share of such costs (90 percent or more). It follows that the Mission Rock CTGs would be dispatched when they burn less fuel per MWh than the resource(s) they would displace, i.e., when they produce fewer GHG emissions. There are exceptions in theory, but not in practice.[13]

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[9] This displacement can include injecting energy from the new resource into storage for later discharge. Because a share of stored energy is lost, output from the new facility that is stored will exceed the amount of (unstored) energy (from other resources) that is displaced. The share of stored energy that is lost depends upon the storage technology and the numbers of hours for which the energy is stored. This is called the charge/discharge efficiency.

[10] At very low natural gas prices relative to coal prices, i.e., when electricity from natural gas is cheaper than that from coal, new natural gas-fired generation will displace coal-fired generation. In markets such as California, where GHG emissions allowance costs are a component of the market price, coal-fired generation is displaced even sooner due to its higher carbon content. The displacement of coal- rather than natural gas-fired generation, when it occurs, results in even greater GHG emissions reductions.

[11] A balancing authority is the entity responsible for maintaining transmission grid reliability in real time (there are five balancing authorities in California: the California Independent System Operator, Los Angeles Department of Water and Power, Imperial Irrigation District, Turlock Irrigation District, and the Balancing Authority of Northern California). It may call upon a generator to dispatch to maintain reliability and other transmission line needs as discussed in footnote 10.

[12] Power plants provide not only energy, but various products necessary to ensure continued service and keep the transmission grid stable during periods of high electricity demand and in the face of major component failure. There include frequency regulation, operating reserves, voltage support, inertia and others.

[13] If a plant's variable operation and maintenance (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

The operation of a (new) natural gas-fired generation facility, holding the portfolio of remaining generation resources constant,[14] displaces energy from existing natural gas- and coal-fired power plants, not energy from low- and zero-carbon resources (renewables, large hydroelectric generation, and nuclear facilities). Most renewable resources have must-take contracts with utilities, which must purchase all the energy produced by these 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 these generation technologies are far lower than those of natural gas-fired generators (e.g., fuel costs for these resources are much lower); these resources can bid into spot markets for energy at prices far below those required by natural gas plants.

When a new natural gas-fired plant displaces energy from a coal-fired plant, GHG emissions unambiguously fall. The heat content (Btu) of the fuel needed by a simple-cycle natural gas plant and a coal plant to generate one MWh of electricity are roughly equal, but the carbon content of a Btu of natural gas is less than 60% that of coal.

While the development and operation of a new natural gas-fired power plant displaces higher-emitting resources, it is not possible to estimate the magnitude of the resulting GHG emissions reduction from the fuel consumption, operating characteristics, or operating profile of the plant, or to compare reductions due to the operation of one new plant to those from development and operation of a plant with different use and performance characteristics. The development of an efficient combined cycle will not necessarily result in greater reductions in GHG emissions than development of a less efficient peaking plant. Consider a 30-MW facility with a heat rate of 10,000 Btu/kWh when operated at full output that can be turned on quickly, generating approximately 15 to 30 MW in a matter of minutes. Use of this plant to meet contingency needs (e.g., demand on a hot afternoon, or in response to a drop in solar output) 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 for several hours in order to be available later the same day or the next day, and/or cannot operate at 30 MW without a marked degradation in thermal efficiency (and thus increases in GHG emissions). More generally, a utility or balancing authority will dispatch a new plant as one element in a portfolio of plants used to meet demand over the next few hours in a least-cost (lowest-emitting) fashion. It is not possible to know exactly how that portfolio dispatch would differ in the absence of the new facility. If the new facility displaces a natural gas-fired resource or resources that are much less

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dispatched first. Such costs do not vary enough across plants, however, to warrant considering this possibility. If a natural gas-fired plant's per-MMBtu fuel costs are very low, it may be less efficient (higher GHG emitting) but still be dispatched first. Natural gas costs in California, however, are higher than elsewhere in the Western Electricity Coordinating Council (WECC) and thus this scenario is unlikely to occur.

[14] The assessment here evaluates the differences in system performance with and without the new resource. Unless otherwise noted, it does not compare the emissions in a system in which the new resource is present to another in which a different new resource is developed.

efficient, the reduction in GHG emissions will be substantial; if only slightly less efficient resources are displaced, the reductions will be much smaller.[15]

ENERGY DISPLACEMENT AND LOCAL CAPACITY NEEDS

As new generation capacity in the California ISO-defined Big Creek - Ventura LRA, Mission Rock would provide local reliability services. The California ISO has determined in their *2022 Local Capacity Technical Analysis* that the Big Creek – Ventura area needs 2,597 MW of local capacity.[16] Mission Rock would contribute up to 275 MW of net local natural gas-fired capacity to these areas, an additional 25 MW and 100 MWh of battery support and up to 275 MW of synchronous support.

Local reliability requires generation by resources located within an LRA; the local capacity requirement (LCR) reflects the amount of capacity that must be generating, synchronous to the grid or available within a few minutes under 1-in-10 load conditions.[17] At lower levels of demand, a (smaller) share of local capacity must be generating, synchronous to the grid or available on a moment's notice as long as reliability cannot be maintained solely with imported energy in the event of major component failures.

The number of hours per year that Mission Rock would be required to operate in support of local reliability needs and the amount of energy that would be generated as a result are not known, although for air quality permitting purposes the five CTGs at Mission Rock each would be limited to a maximum of 2,500 hours per year; California ISO operating procedures that result in the dispatch of specific generating units for local reliability purposes are confidential. When called upon to generate for such purposes, however, Mission Rock would be expected to be the least-cost and thus lowest-emitting facility able to do so, given the duty cycle that was necessary to provide local reliability. It would thus displace less-efficient resources, reducing GHG emissions resulting from relying on the latter.

Greenhouse Gas Table 4 illustrates the thermal efficiency of existing peaking facilities in the Big Creek-Ventura LRA and provides the expected thermal efficiency of the CTGs for Mission Rock for comparison. It should be noted that **Greenhouse Gas Table 3** shows values using the net MW capacity, while **Greenhouse Gas Table 4** shows Mission Rock values using the gross MW capacity, with existing facility performance based on actual data (net).

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[15] The impact of a new power plant on the electricity system can be evaluated using sophisticated simulation software that mimics the operation of the Western grid over a ten-year or longer period. Such tools are generally used to measure the impact of more substantial changes, such as large changes in fuel prices or the addition or retirement of multiple plants (e.g., those resulting from the addition of several thousand MW of renewable facilities). However, as the algorithms in this software yield a least-cost dispatch of the power plants in the system, the simulated addition of a single plant will always result in lower GHG emissions.

[16] CA ISO, *2022 Local Capacity Technical Analysis: Final Report and Study Results*, May 3, 2017, –pp. 59-62.

[17] 1-in-10 load conditions refer to a level of demand that is expected to be observed on only one day in ten years.

Greenhouse Gas Table 4
Heat Rates, Capacity Factors, and GHG Emissions Performance
for Big Creek-Ventura Peaking Facilities, 2015 – 2016

Plant Name	Capacity (MW)	Output (MWh)	Heat Rate[a] (Btu/kWh)	Capacity Factor	GHG Performance[b] ($MTCO_2$/MWh)
Ellwood	56.7	10,386	13,894	1.0%	0.735
Mandalay 1	217.6	194,994	10,853	5.1%	0.574
Mandalay 2	217.6	207,271	10,908	5.4%	0.577
Mandalay 3	138.1	6,381	25,517	0.3%	1.350
McGrath	49	72,878	10,045	8.5%	0.531
Total	**679**	**491,910**	**11,011**	**4.1%**	**0.582**
Mission Rock CTG Estimates	287[c]		9,561		0.540

Source: Energy Commission Quarterly Fuel and Energy Reporting database (CEC 2017); CAL2015a.
Notes:

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

b. GHG performance conversion factor for natural gas of 0.529 $MTCO_2$/MW/10,000 Btu/KWh was used to derive these performance values.

c. Gross output, MWh at ISO conditions.

While the net heat rates for each of the Mission Rock CTGs would be unique, and to a small degree dependent on their operating profiles, each would be expected to have a heat rate clearly lower than almost all of the existing simple-cycle combustion turbine resources in the LRA. Note, however, that the relative efficiencies of Mission Rock and the existing natural gas-fired resources in the Big Creek – Ventura (LRA) do not drive the outcome that Mission Rock, as a provider of local capacity needs, would result in lower GHG emissions. Were Mission Rock CTGs less efficient than the existing resources, they would be the last resources to be called upon when peaking natural gas-fired generation was needed.

GHG EMISSIONS AND FLEET TURNOVER

In the longer term, the development and operation of new generation facilities reduce the use of less-efficient generation resources, and ultimately, to their retirement. By reducing revenue streams accruing to other natural gas-fired generators (for the provision of both energy and capacity-related services, whether through markets or under a bilateral contract), new facilities render their less efficient counterparts less profitable and riskier to operate. This follows from the fixed demand for energy and ancillary services; developers of a new power plant do not stimulate demand for energy and other products they provide, but merely provide a share of the energy that is needed to meet demand and the capacity needed to reliably operate the system. In doing so, new facilities not only reduce the use of less efficient generators, they facilitate their retirement.

The long-run impact of the natural gas-fired fleet turnover, as described here, can be seen from historical changes in resources that are providing electricity in California as presented below in **Greenhouse Gas Figure 1**. In 2001, approximately 74,000 GWh (62.5 percent of natural gas-fired generation) in California was from pre-1980 natural gas-fired steam turbines, combusting an average of 11,268 Btu per kWh (not shown in

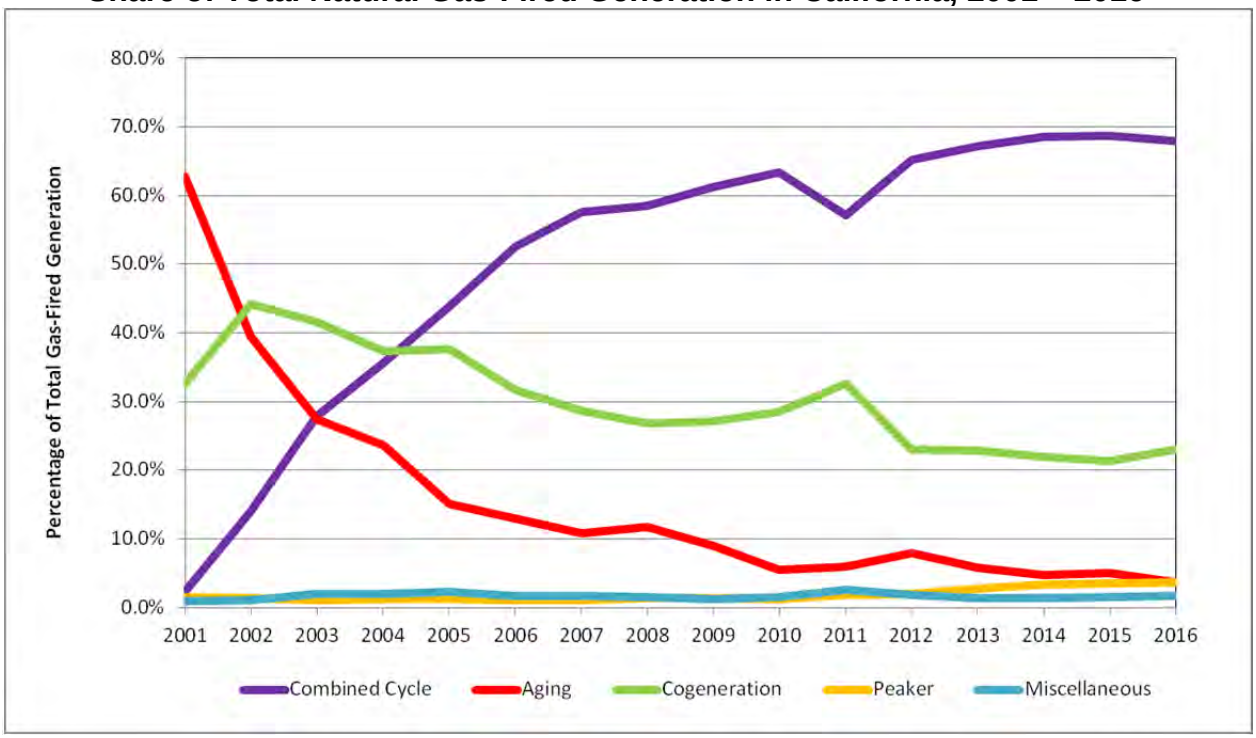
the figure). By 2010, this share had fallen to approximately 6,000 GWh (5.4 percent); 64.1 percent of natural gas-fired generation was from new combined cycles with an average heat rate of 7,201 Btu per kWh (CEC 2011, also not shown in the figure).[18] The net change over this period was a 22 percent reduction in GHG emissions (also not shown in the figure), despite a 3.5 percent increase in generation. Post-2010 use of natural gas-fired generation has been affected by the retirement of the San Onofre Nuclear Generating Station and a prolonged drought, but it remains the case that the development of new combined-cycle generation has allowed for the retirement of aging natural gas-fired steam turbines along the California coast and in the San Francisco Bay Delta. Those that remain in operation have seen a dramatic reduction in their capacity factors[19] and are now used primarily as a source of dispatchable capacity to ensure reliability in transmission-constrained areas and during hours of high demand.

The impact of turnover on the thermal efficiency of the natural-gas fired generation fleet is illustrated in **Greenhouse Gas Figure 2**. Fuel combustion, and thus GHG emissions, per unit of electricity produced have fallen as newer plants have replaced older ones.

[18] The remaining 30 percent of natural gas-fired generation is largely cogeneration; slightly more than one percent is from peaking units. For a detailed discussion of the evolution of natural gas-fired generation in California since 2000, see *Thermal Efficiency of Gas-Fired Generation in California: 2014 Update* (CEC-200-2013-005; September 2014).

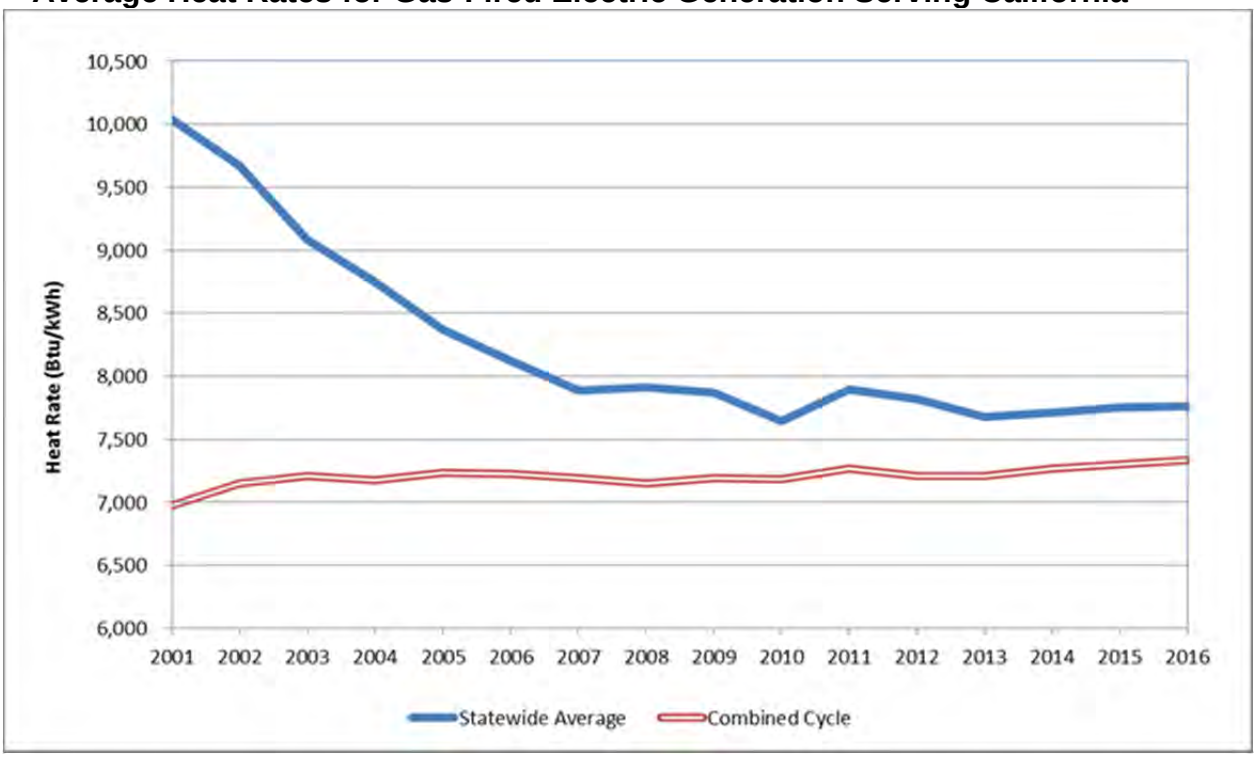
[19] A unit's capacity factor is its output expressed as a share of potential output, the amount it would generate if it were operated continuously at 100 percent of its maximum capacity for every hour of the year.

Greenhouse Gas Figure 1
Share of Total Natural Gas-Fired Generation in California, 2001 – 2016



Source: California Energy Commission, compiled from Quarterly Fuel and Energy Reports.

Greenhouse Gas Figure 2
Average Heat Rates for Gas-Fired Electric Generation Serving California

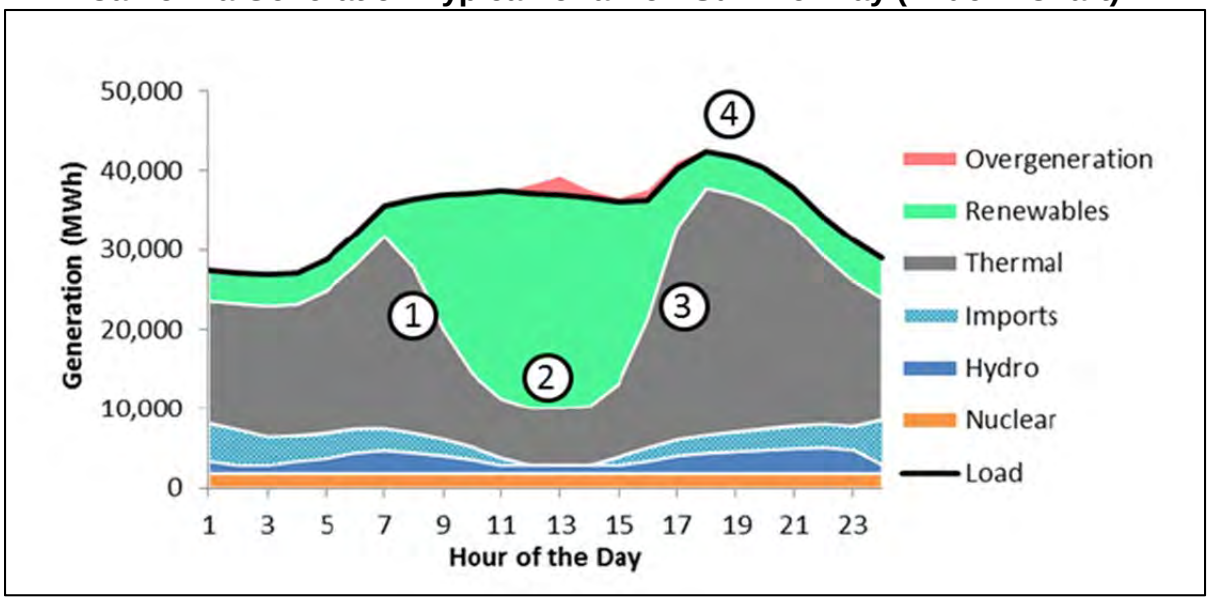


Source: California Energy Commission, compiled from Quarterly Fuel and Energy Reports. Does not include cogeneration.

NEW NATURAL GAS PLANTS AND RENEWABLE INTEGRATION

At levels of renewable energy penetration in excess of 33 percent, relatively efficient fast-start, fast-ramping resources such as Mission Rock further contribute to GHG emission reductions by increasing the amount of renewable energy that can be integrated into the electricity system. This can be seen in **Greenhouse Gas Figure 3,** which depicts the estimated operating profile of the generating resources of the increasingly high-solar electricity system that California will develop over the next 13 years and beyond as the RPS increases to 50 percent or more in 2030. Much of the additional renewable energy will come from solar resources, even if there is limited development of utility-scale solar generation, as the residential and commercial sectors take advantage of falling distributed solar costs and new residential construction post-2020 is required to be zero-net energy, (i.e., include solar panels).

Greenhouse Gas Figure 3
California Generation Typical for a Non-Summer Day ("Duck" Chart)



Source: CA ISO 2014

The gray area represents necessary thermal generation, which is increasingly natural gas-fired over time as California portfolios are divested of coal-fired generation pursuant to the state's Emission Performance Standard. Note that imports are reduced to zero at midday, and hydro generation is limited to run-of-river (hydro-generation facilities that do not have water storage, and from water that must be allowed to flow due to recreational needs, flood control, aquatic habitat preservation, etc.). A share of midday generation must also be flexible, dispatchable natural gas to the extent that: (a) a threshold amount of thermal capacity needs to be idling (or at least readily available, not unlike a hybrid car) at mid-day at minimum output to protect against sudden component failures (those of major power plants and transmission lines), or drops in solar output; and, (b) a large amount of natural gas-fired generation will be needed four to eight hours later when solar energy is unavailable, and thus must be on line and generating at minimum output at mid-day.

Greenhouse Gas Figure 3 illustrates a case of over-generation; in which renewable output at mid-day and necessary natural gas-fired generation jointly result in too much energy being produced. There are several ways to deal with over-generation. In theory, the surplus energy can be exported to neighboring states. But much of the over-generation expected in California will occur during the low-demand months of February to April, when similar surpluses exist in the Pacific Northwest due to the snow melt and resulting increase in hydroelectric generation in the Columbia River basin. Under these conditions, export potential is likely to be limited and export prices would be near zero or negative, substantially increasing the cost of generating surplus energy, as neighboring areas would be paid to absorb it.

A long-term solution for over-generation is expected to be the development of cost-effective, multi-hour electricity storage, allowing the surplus to be stored until it can be used in evening hours. The 25-MW battery portion of Mission Rock could potentially be recharged using this low-cost energy that might otherwise be exported (possibly at a loss) or curtailed. This energy can then be used to obviate the need for gas-fired generation during evening hours. To the degree that large-scale batteries at Mission Rock or elsewhere are not able to absorb this energy, over-generation can be dealt with by curtailing renewable generation or reducing the amount of gas-fired generation that is needed during midday and early afternoon hours. The latter is facilitated by developing natural gas-fired resources such as Mission Rock that can cycle on and off at least twice a day.[20]

COMPLIANCE WITH LORS – JOSEPH HUGHES

Federal

Mission Rock would not be subject to PSD permitting requirements of 40 CFR Parts 51 and 52 (please see the **Air Quality** section's Compliance with LORS subsection), including not being subject to a GHG emissions BACT analysis. The New Source Performance Standards Subpart TTTT-Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units (Title 40, Code of Federal Regulations, Part 60.5508) are set under the authority of the Clean Air Act section 111(b) and are applicable to new fossil fuel-fired power plants commencing construction after January 8, 2014. The CTGs for Mission Rock would be expected to supply less than the design efficiency times the potential electric output as net-electric sales on a 3 year rolling average basis and would therefore be considered non-base load units. Consequently, the CTGs would only be subject to a heat input limit of 120 lbs CO_2/MMBtu. Compliance with this limit would be ensured with the implementation of Condition of Certification **AQ-61**.

VCAPCD determined as long as the new Mission Rock CTG's have net electric sales of less than 0.41 * 7,268,033 MWh, or 2,979,893 MWh per year, it will be subject to the 120 lb CO_2/MMBTU limit for non-base load gas turbines. The new Mission Rock CTGs

[20] For a detailed discussion of the operational needs for a high-solar portfolio, see Energy and Environmental Economics, *Investigating a Higher Renewables Standard in California*, January 2014, available at http://www.ethree.com/public_projects/renewables_portfolio_standard.php.

are expected to operate with an annual capacity factor of approximately 29%. With a full load net nominal output of approximately 275 MW, each Mission Rock CTG would supply a maximum of approximately 29% x 8760 hrs/year x 275 MW/Hr = 698,610 MWh per year to a utility power distribution system. Since this output is less than the allowable level of 2,979,893 MWh per year, Mission Rock would be a non-base load unit under the rule and would be subject to the Best System of Emission Reduction (BSER) established for that subcategory.

State

If built, Mission Rock would be required to participate in California's greenhouse gas Cap-and-Trade program. This program is part of a broad effort by the State of California to reduce GHG emissions as required by Assembly Bill 32 (Núñez, Chapter 488, Statutes of 2006) (AB 32), which is managed by the California Air Resources Board (ARB). Market participants, such as Mission Rock, would be required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Thus, as a GHG Cap-and-Trade participant, this project would be consistent with California's landmark AB 32 program, which is a statewide program coordinated with a region-wide Western Climate Initiative program to reduce California's GHG emissions to 1990 levels by 2020. These requirements were extended to at least 2030 under the requirements of Senate Bill 32 (SB 32), codified as Section 38566 of the Health and Safety Code. SB 32 extends California's commitment to reduce GHG emissions by requiring the state to reduce statewide emissions to 40 percent below 1990 levels by 2030.

The original AB 32 Scoping Plan was adopted by ARB in 2008, with updates planned every five years. On May 22, 2014, ARB adopted a document titled "First Update to the Scoping Plan." On October 27, 2017, ARB released a draft of their most recent update titled "2017 Climate Change Scoping Plan." The 2017 update incorporates the 2030 target of reducing California GHGs to 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050.

ARB staff continues to develop and implement regulations to refine key elements of the GHG reduction measures to improve their linkage with other GHG reduction programs. The project may have to provide additional reports and GHG reductions, depending on the future regulations expected from ARB.

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

Mission Rock, because it would have a permitted capacity factor of below 60 percent, is not subject to the California's Emission Performance Standard of 1,100 lbs of carbon dioxide per net MWh.

Local

The VCAPCD does not currently have any approved GHG emissions regulations that would apply to the project. However, they included in the PDOC Condition 61 (Condition of Certification **AQ-61**) to ensure compliance with currently applicable federal requirements.

CONCLUSIONS

The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, staff concludes that the project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. In addition, the project would provide modular, flexible, dispatchable, and fast-ramping power which is expected to be necessary to integrate variable-energy renewable generation on the scale projected in the California Public Utilities Commission (CPUC) and California ISO long-term planning processes.

Staff notes that mandatory reporting of GHG emissions per federal government and ARB greenhouse gas regulations would occur, and these reports would enable these agencies to gather the information needed to regulate the Mission Rock project in trading markets, such as those required by regulations implementing the California Global Warming Solutions Act of 2006 (AB 32).

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

Mission Rock is proposed as a modern, simple-cycle power plant, as described in the **Project Description.** Mission Rock would have an expected annual capacity factor well below 60 percent; therefore Mission Rock is not subject to the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.). Finally, because this expected potential annual average electric sales rate is less than the 41 percent design efficiency, the new Mission Rock CTGs would be non-base load units under federal requirements. As non-base load units, these turbines would be limited to burning natural gas resulting in a consistent emission rate of 120 lb CO_2/MMBTU or less.

Staff has reached the following conclusions about Mission Rock based on CEQA guidelines:

Mission Rock would have less than significant GHG emissions impacts because it:

- is proposed as a modular, high-efficiency, simple-cycle power plant and battery system that would be more efficient and have lower GHG emissions than simple-cycle power plants currently operating in the Big Creek – Ventura local capacity area (LCA);
- would facilitate the integration of renewable energy resources, which would lower the statewide GHG emissions from the electricity sector;
- Would comply with the Avenal Precedent Decision, and
- would have less than significant impacts by complying with applicable regulations and plans related to the reduction of GHG emissions as follows:
    - Mission Rock would be subject to compliance with the AB 32 Cap-and-Trade regulation that implements the state's regulatory plan for reducing GHG emissions from the electricity sector; and
    - Mission Rock would recycle construction wastes to reduce GHG emissions from construction activities (as required by **WASTE-4**) to comply with state policy and local Climate Action Plans.

PROPOSED CONDITIONS OF CERTIFICATION – JOSEPH HUGHES

Staff reviewed the currently known construction emissions related policies and goals that could be appropriate to this project and that also may provide a substantial reduction in GHG emissions. Staff's review determined that to conform to policies and goals related to recycling and waste reduction, it is reasonable to require that the construction waste be recycled to the extent feasible. The requirement to appropriately recycle construction and demolition wastes is included in the **Waste Management** section (Condition of Certification **WASTE-4**), so no additional conditions related to construction GHG emissions reductions are proposed in this section.

During facility operation, the facility owner would participate in California's GHG Cap-and-Trade program. The facility owner would be required to report GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Similarly, the proposed facility would be subject to federal mandatory reporting of GHG emissions. The facility owner may have to provide additional reports and GHG reductions, depending on the future regulations formulated by the U.S. EPA or the ARB.

Condition of Certification **AQ-61** of the Air Quality section requires that the CTGs shall comply with 40 CFR Part 60, Subpart TTTT, Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units. As defined by the annual hours of operation limits, and the natural gas fuel only requirements, of this permit, the CTGs are subject to a CO_2 emission standard of 120 lb CO2 per MMBTU, averaged over a twelve (12) operating month rolling average.

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ACRONYMS

AB	Assembly Bill
ARB	Air Resource Board
BSER	Best System of Emission Reduction
CalEEMod	California Emissions Estimator Model
California ISO	California Independent System Operator
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO2E	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
CPS	Carbon Pollution Standards
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
LCA	Local Capacity Area
LCR	Local Capacity Requirement
LRA	Local Reliability Area
MGS	Mandalay Generating Station
MMBtu	Million British Thermal Units
MT	Metric Tonnes
MTCO2E	Metric Tons of CO2-Equivalent
MW	Megawatt
MWh	Megawatt-hour
N_2O	Nitrous Oxide
NO_2	Nitric Oxide
O_3	Ozone
OTC	Once-Through Cooling
PFC	Perflurocarbons
PM10	Particulate Matter
PM2.5	Fine Particulate Matter
PSD	Prevention of Significant Deterioration

RPS	Renewable Portfolio Standard
SF_6	Sulfur Hexafluoride
SO_2	Sulfur Dioxide
SWRCB	State Water Resource Control Board
VCAPCD	Ventura County Air Pollution Control District
WECC	Western Electricity Coordinating Council
U.S. EPA	United States Environmental Protection Agency

ALTERNATIVES

Jeanine Hinde[1]

SUMMARY CONCLUSIONS

This analysis evaluates a reasonable range of potentially feasible alternatives to the proposed Mission Rock Energy Center (Mission Rock or proposed project). Mission Rock is owned by Mission Rock Energy Center, LLC (applicant). The following are Energy Commission staff's summary conclusions for the project alternatives that are fully analyzed and compared to the proposed project in this staff assessment:

- The **No-Project Alternative** would avoid several environmental impacts relating to construction and operation of Mission Rock. Continuation of existing conditions at the site would result in a greater potential for impacts to occur from site flooding (the site would not be elevated above the 100-year event floodplain as it would under Mission Rock), storm water runoff, and water quality. The estimated fiscal benefits of Mission Rock would not occur under the No-Project Alternative. The No-Project Alternative would not attain the project's basic objectives.
- The **Petrochem Refinery Off-site Alternative** would avoid Mission Rock's significant impacts on built environment historical (cultural) resources associated with the Santa Clara Valley Rural Historic District (SCVRHD), which would be greatly affected by Mission Rock's transmission line. Significant visual resources impacts would be avoided relating to the SCVRHD's high-sensitivity visual and historical resources in the transmission line viewshed. This alternative would reduce potentially significant impacts on aircraft and pilot safety from thermal plumes. This alternative would avoid impacts on riparian habitat; however, it could cause greater potential impacts on listed bird species colliding with transmission line structures during nocturnal migration.
- The **Del Norte/Fifth Street Off-site Alternative** would avoid Mission Rock's significant impacts on built environment historical resources associated with the SCVRHD, which would be greatly affected by Mission Rock's transmission line. Significant visual resources impacts would be avoided relating to the SCVRHD's high-sensitivity visual and historical resources in the transmission line viewshed. This alternative would avoid construction noise impacts on least Bell's vireo, a state and federally listed endangered species; however, it would cause greater potential impacts on listed bird species colliding with transmission line structures during nocturnal migration. This alternative would cause potentially significant impacts on surficial archaeological and ethnographic resources, which is an impact that would not occur under Mission Rock. Due to its location near Camarillo Airport's arrival and departure flight tracks, this alternative would cause potentially significant and unavoidable impacts on aircraft and pilot safety from high-velocity thermal plumes.

[1] Alternatives Appendix-1 lists Energy Commission staff contributors to the technical and environmental analyses of project alternatives.

- The **Ormond Beach Area Off-site Alternative** would avoid Mission Rock's significant impacts on built environment historical resources associated with the SCVRHD, which would be greatly affected by Mission Rock's transmission line. Significant visual resources impacts would be avoided relating to the SCVRHD's high-sensitivity visual and historical resources in the transmission line viewshed. This alternative would avoid construction noise impacts on least Bell's vireo, and it would avoid impacts on riparian habitat. This alternative would reduce potential impacts on listed bird species from collisions with transmission line structures. Staff identifies the potential for nitrogen deposition to impact sensitive habitat in the vicinity of this alternative site, which is an impact that would not occur under Mission Rock. This alternative could cause potentially significant and unavoidable impacts on aircraft and pilot safety from high-velocity thermal plumes; a mitigation measure recommending a change in the regular naval operations at Naval Base Ventura County Point Mugu to avoid the site could reduce the potential impact to less than significant. However, the feasibility of such a mitigation measure is unknown.
- The **Battery Energy Storage Alternative** would not generate high-velocity thermal plumes, and potentially significant impacts on aircraft and pilot safety would be avoided. Air quality staff concludes that project operations greenhouse gas emissions would be reduced under this alternative. Impacts relating to project operations noise and vibration, wastewater discharge, and water quality would be reduced. The transmission line route and grid connection at the Santa Clara Substation is assumed to be the same as Mission Rock, and the significant cultural and visual resources impacts on the SCVRHD would also occur under this alternative.

The three off-site alternatives could potentially satisfy the project's basic objectives, including the underlying project purpose, which is to meet the local capacity requirement (LCR) need in the Moorpark sub-area of the Big Creek/Ventura local reliability area by 2021. However, it is uncertain whether the applicant could obtain site control and complete environmental review and licensing to have a project built and commissioned at another site to meet LCR needs by 2021. The applicant withdrew Mission Rock from the California Independent System Operator (California ISO) interconnection queue Cluster 9 and joined queue Cluster 10, and staff is now unable to determine whether any *downstream* facilities (i.e., beyond the first point of interconnection with the grid) would be required for an interconnection at the Santa Clara Substation for the proposed project, the Petrochem Refinery Off-site Alternative, or the Battery Energy Storage Alternative. The Phase I interconnection study for Mission Rock should be available in the first quarter of 2018.

With the possible retirement of 1,500 megawatts (MWs) of generating capacity at the Ormond Beach Generating Station, connecting to an existing 220-kV breaker position at the Ormond Beach Substation could allow the Del Norte/Fifth Street Off-site Alternative or the Ormond Beach Area Off-site Alternative to interconnect with the grid at the substation without causing downstream impacts on the transmission grid. However, the proponent for a project at either site would have to apply to the California ISO interconnection process, and a system impact study would be required to assess potential effects on the grid.

The 200-MW, 4-hour Battery Energy Storage Alternative is based on the project description for the battery energy storage system (BESS) that is planned at the Alamitos Generating Station in Long Beach, but configured by the size limitations of the Mission Rock site. This alternative is included because staff anticipates that parties to this proceeding and the public will expect inclusion of an alternative that would avoid on-site use of fossil fuels for power generation.

In August 2017, the California ISO prepared and submitted a special study to the Energy Commission describing a subset of alternative resource scenarios—including batteries—that could meet the LCR need absent construction and operation of new incremental natural gas-fired generation. Staff acknowledges that the configuration of batteries in staff's alternative does not appear to match the alternative resource scenarios evaluated by the California ISO to meet the Moorpark sub-area LCR. However, staff discusses its 200-MW battery energy storage configuration as a way to provide a relative comparison of environmental impacts of a battery-based alternative to the proposed project.

Staff's Battery Energy Storage Alternative could contribute to meeting the LCR need (i.e., the underlying project purpose) and would reduce some environmental impacts associated with a natural gas-fired project. A BESS that would fully meet the LCR need, which staff is not responsible for or capable of designing, would not reverse the conclusions in the comparative analyses of impacts for this alternative, but could change the relative impact comparisons. For example, impacts on visual resources would require analyzing the height and massing of structures containing the batteries in a proposal for such a project.

The last two project objectives address siting the project as near as possible to a Southern California Edison (SCE) substation with available transmission capacity to serve the Moorpark sub-area and reusing a brownfield site in an industrial area. The conceptual route for connecting a project at the Ormond Beach Area Off-site Alternative to the grid mostly follows an existing utility corridor to the Ormond Beach Substation approximately three-quarter mile south of the site; this alternative site is the closest to an SCE substation that would likely have transmission capacity.

A detailed discussion of conclusions is presented near the end of this **Alternatives** section under, "Summary Comparison of Key Environmental Impacts and Conclusions."

The **Environmental Justice** section of this staff assessment discusses California's state policy requirements for lead agency decision makers to consider environmental justice (EJ) if their actions could cause impacts on the environment. **Alternatives Appendix-2** provides EJ analyses for the off-site alternatives evaluated in this section.

INTRODUCTION

Energy Commission staff (staff) reviewed the alternatives analysis contained in the Mission Rock Application for Certification (AFC) (Calpine 2015). In addition to the No-Project Alternative, the AFC discusses alternative sites, alternative combustion turbine technologies, fuel technology alternatives, and alternative cooling technologies. The AFC states that the proposed project is the preferred alternative due to its ability to minimize construction impacts of linear features and other environmental impacts.

The information provided in the AFC served as a starting point for the evaluation of alternatives prepared by staff. Alternatives evaluated in this staff assessment are either eliminated from further consideration or compared to Mission Rock to determine their potential to avoid or substantially lessen the significant effects of the proposed project while feasibly attaining most of the project's basic objectives.

Review and investigation of information on potential alternatives led staff to fully analyze three off-site alternatives. Staff also evaluated an alternative with 200 MWs of battery energy storage capacity that would be constructed and operated in place of Mission Rock at the project site. And staff evaluated the No-Project Alternative. Under Mission Rock, environmental impacts would be reduced to less than significant with implementation of recommended conditions of certification and through compliance with applicable laws, ordinances, regulations, and standards (LORS).

CEQA REQUIREMENTS

As lead agency for the proposed project, the Energy Commission is required to consider and discuss alternatives to the proposed project. The guiding principles for the selection of alternatives for analysis in an environmental impact report (EIR) are provided by the California Environmental Quality Act Guidelines (CEQA Guidelines) (Cal. Code Regs., tit. 14, § 15000 et seq.). Section 15126.6 of the CEQA Guidelines indicates that the alternatives analysis must:

- describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project;
- evaluate the comparative merits of the alternatives;
- consider alternatives that would avoid or substantially lessen any significant environmental impacts of the proposed project, even if these alternatives would impede to some degree attainment of the project objectives, or would be more costly; and
- describe the rationale for selecting alternatives to be discussed and identify alternatives that were initially considered but then rejected from further evaluation.

These regulations also apply to the document used as a substitute for an EIR in a certified state regulatory program (Cal. Code Regs., tit. 14, §§ 15251 and 15252).

The range of potentially feasible alternatives selected for analysis is governed by the "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)). In addressing feasibility of alternatives, factors that may be taken into account include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (Cal. Code

Regs., tit. 14, § 15126.6, subd. (f)(1)). Under the "rule of reason," an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(3)).

Alternatives may be eliminated from detailed consideration by the lead agency if they fail to meet most of the basic project objectives, are infeasible, or could not avoid any significant environmental effects (Cal. Code Regs., tit. 14, § 15126.6, subd. (c)).

The CEQA Guidelines require an evaluation of the "no project" alternative along with its impact. As indicated in the CEQA Guidelines, "[t]he 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, subd. (e)(1)). "The 'no project' analysis shall discuss the existing conditions…at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)). If the environmentally superior alternative is the "no project" alternative, the EIR shall identify an environmentally superior alternative among the other alternatives.

Sometimes alternatives have environmental advantages and disadvantages, but no clearly superior alternative becomes evident, because the importance of environmental impacts varies based on their different priorities and/or resource sensitivities. The final staff assessment will discuss staff's conclusions on whether an alternative emerges as an environmentally superior alternative following review and comment on this preliminary staff assessment by the parties to this proceeding and the public.

PROJECT OBJECTIVES

Selection of alternatives to include in the alternatives analysis begins with the project objectives. Section 15124 of the State CEQA Guidelines addresses the requirement for a statement of objectives (Cal. Code Regs., tit. 14, § 15124(b)):

> *A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate…and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.*

The applicant's AFC identifies basic objectives for the development of Mission Rock, starting with the primary objective (Calpine 2015). Energy Commission staff added text *(in italics)* to the applicant's primary objective to increase its consistency with the California Public Utilities Commission (CPUC) decision authorizing procurement of new electrical capacity to meet local reliability needs (further discussed below):

- Combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology, to meet the need for new local capacity in the Moorpark sub-area of the Big Creek/Ventura local reliability area of Southern California Edison's (SCE's) service territory *by 2021, and contribute to the integration of renewable energy resources into the electric power grid*;
- Safely construct and operate a 275-megawatt (MW), natural gas-fired, simple-cycle generating facility to meet SCE's growing need for local capacity due to the pending retirement of once-through cooling plants in the Moorpark sub-area of the Big Creek/Ventura local reliability area of Southern California;
- Site the proposed project as near as possible to an SCE substation with available transmission capacity to serve the Moorpark sub-area; and
- Site the proposed project in an existing industrial area on a brownfield site, to minimize environmental impacts.

Consistent with the project's basic objectives, the underlying project purpose is to meet the need for local reliability in the Moorpark sub-area by 2021.

The applicant's project objectives could be interpreted to rule out off-site alternatives with the potential to support local capacity requirements in the Big Creek/Ventura local reliability area (LRA). However, the analysis of potentially feasible alternatives envisioned by CEQA cannot be unduly limited by project objectives that can only be satisfied by the proposed project. Therefore, staff's alternatives analysis broadly interprets the applicant's project objectives to foster a robust analysis of potential alternatives to the proposed project, including three off-site alternatives and an alternative that would develop and install 200 MWs of battery energy storage capacity to replace Mission Rock at the project site.

POTENTIAL FOR MISSION ROCK TO CONTRIBUTE TO LOCAL GRID CAPACITY REQUIREMENTS

The CPUC issues decisions authorizing procurement of new electrical capacity by the state's investor-owned utilities to meet local reliability needs. In the two most recent CPUC decisions in its Long-term Procurement Plan (LTPP) proceeding, levels of procurement are specified for preferred resources (energy efficiency, demand response, and utility-scale and distributed renewable generation), energy storage, and natural gas-fired generation (NGFG).

These procurement authorizations are intended to ensure local reliability following the potential retirement of once-through cooled (OTC) generation facilities in the Southern California portion of the California Independent System Operator (California ISO) balancing authority area and permanent closure of the San Onofre Nuclear Generating Station.

To evaluate need, CPUC's LTPP proceeding takes a 10-year-ahead look at system, local, and *flexible* resource needs.[2] The assumptions are developed in conjunction with the Energy Commission (provides the demand forecast) and the California ISO (uses the same assumptions for transmission planning).

In February 2013, as part of its 2012 LTPP proceeding, the CPUC issued a decision (D.13-02-015, referred to as the Track 1 Decision) authorizing procurement to meet the local capacity requirement (LCR) in the West Los Angeles (LA) sub-area of the LA Basin LRA (West LA Basin) and the Moorpark sub-area of the Big Creek/Ventura LRA by 2021 (CPUC 2013a). The authorization for new capacity was done to maintain reliability after the potential retirement of approximately 7,000 MWs of OTC capacity in the LA Basin and Big Creek/Ventura local areas, including 1,946 MWs at the Mandalay Generating Station (MGS) and the Ormond Beach Generating Station. D.13-02-015 directed SCE to procure between 215 and 290 MWs of electrical capacity in the Moorpark sub-area for local reliability purposes.

To satisfy authorized procurement under the Track 1 decision, SCE issued a request for offers (RFO) seeking new LCR resources in the Moorpark sub-area, including energy efficiency, renewable distributed generation, energy storage, and NGFG. SCE entered into contracts with NRG Oxnard Energy Center, LLC (a subsidiary of NRG Energy Inc.) to meet a share of the Moorpark sub-area LCR, including a 20-year contract for new NGFG generation at the MGS site, which is the Puente Power Project (Puente). On November 26, 2014, SCE submitted an application (A.14-11-016) to the CPUC seeking approval of its contracts entered into as a result of the LCR RFO for the Moorpark sub-area, including cost recovery for those contracts (CPUC 2014).

On May 26, 2016, the CPUC issued a decision (D.16-05-050) approving, in part, SCE's RFO to meet LCR need in the Moorpark sub-area pursuant to its Track 1 Decision (CPUC 2016). Contracts that were approved by the CPUC include 262 MWs of incremental NGFG (i.e., new capacity) that would be provided by Puente, a simple-cycle peaking facility. The CPUC also approved several preferred resource *load* (i.e., energy use) reduction contracts with energy efficiency and solar generation projects totaling approximately 12 MWs. CPUC's D.16-05-050 states that with its approval of these contracts, SCE has satisfied its obligation to procure between 215 and 290 MWs in the Moorpark sub-area to meet long-term LCR by 2021.

[2] Flexibility is characterized, in part, by a resource's ability to be dispatched by the California ISO, and ramped up and down to produce or curtail energy production.

Puente is a siting case undergoing review by the Energy Commission (docket number 15-AFC-01); it is assumed that the project will proceed if a license for its construction and operation is issued by the Energy Commission. On November 3, 2017, the Committee conducting the Puente proceedings issued an Order granting the applicant's motion to suspend the proceeding until May 1, 2018. If Puente is not constructed, the identified need for local reliability in the Moorpark sub-area would remain.[3] Local reliability could also be met by Mission Rock.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED CONSIDERATION

The proposed project is in a region of Ventura County that includes the Oxnard Plain and generally encompasses the cities of Oxnard, Ventura, Santa Paula, Camarillo, Moorpark, and Fillmore. The Santa Clara River Valley extends through the region to the mouth of the river south of Ventura. Preparation of the alternatives analysis for Puente, which is proposed in Oxnard, included initial reviews of potential sites suggested for analysis by city of Oxnard Planning Division (city) staff. The Puente alternatives analysis also included a review of data compiled by the U.S. Environmental Protection Agency (EPA) on its Facility Registry Service, which is a database that identifies facilities, sites, or places of environmental interest that are subject to regulation. The work to review sites suggested by city staff and data from the EPA database led staff to eliminate eleven potential sites from further consideration under the alternatives analysis for Puente. That initial review of potential sites conducted for Puente is not repeated in the Mission Rock alternatives analysis; however, details of that previous review of sites is contained in the final staff assessment (FSA) for the Puente Power Project, which was published in December 2016 (Energy Commission 2016).

Staff used screening criteria to help determine Mission Rock alternatives to be fully analyzed, and, conversely, alternatives to be eliminated from further analysis. Alternative sites should be:

- located in the Moorpark sub-area of the Big Creek/Ventura LRA,
- determined to provide a potentially feasible site for development of a project similar to Mission Rock while reducing one or more significant impacts of the project without causing its own impacts,
- approximately 10 to 20 acres to allow siting of a facility similar to Mission Rock,
- located within approximately 2 miles of a natural gas pipeline (diameter of 12 inches or greater) and a water supply system pipeline (recycled and/or potable water),

[3] In its *2022 Local Capacity Technical Analysis*, the California ISO summarized LCRs for the Southern California LRAs. Critical contingencies are identified for the Moorpark sub-area of the Big Creek/Ventura LRA. The limiting contingencies establish an LCR need of 554 MWs in the Moorpark sub-area (California ISO 2017a).

- located within approximately 10 miles of an SCE substation with the potential to serve the Moorpark sub-area and not cause downstream impacts on the transmission grid, and
- located outside of the California Coastal Commission defined Coastal Zone.

Some of the alternatives initially considered by staff during the planning process for this analysis were eliminated from detailed consideration because they could not feasibly be accomplished, would not avoid any significant impacts, or would fail to meet most of the basic project objectives (Cal. Code Regs., tit. 14, § 15126.6, subd. (c)). The applicant presented four potential off-site alternatives in its AFC for Mission Rock, including the Vulcan Site and Camino Real Site. The following discussions provide staff's reasons for eliminating these alternatives from further detailed comparative analyses to Mission Rock.

VULCAN SITE

The Vulcan Site is an approximately 55-acre parcel at 6029 E. Vineyard Avenue in an unincorporated area of the county. The site is just south of the Santa Clara River and near the intersection of State Routes 118 and 232. The Vulcan Site is owned by the Vulcan Materials Company and used for concrete and asphalt production and concrete recycling.

The site was used for mining and processing sand and gravel beginning in the 1920s. In 1963, Ventura County approved a Conditional Use Permit (CUP) authorizing existing mining operations in the Santa Clara River; limitations on these operations were imposed in 1983 to address impacts on the river floodway. A CUP was approved in 1969 for operation of an asphalt batch plant. In 2004, Ventura County approved a major modification to merge the two CUPs to allow continued operation of the asphalt and concrete batch plants on the site and remove the existing aggregate plant. Other minor permit modifications pertaining to existing on-site operations were approved in subsequent years.

In October 2014, Ventura County approved a minor modification to the CUP to authorize continued operation of the existing concrete and asphalt batch plants and an increase in allowable daily truck traffic volume at the site. The permit life or operations period specifies that the CUP will expire on October 26, 2034 (CUP PL13-0142 Conditions of Approval).

Existing uses will continue on the Vulcan Site for the foreseeable future; therefore, staff eliminated the site from consideration as a potential off-site alternative for Mission Rock.

Vulcan Materials Company owns an adjacent parcel covering approximately 7 acres that is not part of the Vulcan Site described above. The 7-acre site is a vacant, teardrop-shaped parcel that is unlikely to provide space to accommodate a feasible site plan for a power plant similar to Mission Rock. The site is designated Open Space/Agricultural in the Ventura County General Plan (general plan) and the zoning district is Agricultural Exclusive – 40-acre minimum with a Mineral Resource Protection (MRP) Overlay Zone. The general plan limits amendments relating to agricultural, open space, and rural

designations by requiring majority voter approval for redesignation to another category, or approval by the Ventura County Board of Supervisors.

The relatively small size of the site and the inconsistency with the general plan makes this site highly unlikely to provide a feasible alternative to Mission Rock. Therefore, staff eliminated the smaller, 7-acre parcel from further consideration.

CAMINO REAL SITE

The Camino Real Site is an approximately 27-acre agricultural property in Oxnard. The site is bordered on the east by Revolon Slough and on the other three sides by agricultural fields. Camino Avenue is an east-west frontage roadway that parallels U.S. Route 101 approximately 800 feet north of the site. A church and a health care facility are located approximately 600 feet and 400 feet north of the site, respectively, near the intersection of Trabajo Drive and Camino Avenue. The Camino Real Site does not have direct, paved access to nearby existing roads.

The site was evaluated by staff during preparation of the Puente staff assessment as one of several sites suggested for analysis by Oxnard city staff. As part of that analysis, staff was informed that a paved road would be required to connect the site to N. Del Norte Boulevard for fire vehicle access, which would require an approximately 700-foot-long roadway across adjacent private property.

The Camino Real Site is approximately three-quarter mile northwest of Camarillo Airport. Staff determined that this site is subject to heavy overflight by aircraft using the Camarillo Airport, based on Exhibits 2F and 2G of the *Airport Comprehensive Land Use Plan for Ventura County* (Ventura County Airport Land Use Commission 2000). According to these exhibits, the Camino Real Site would be located directly below and adjacent to common arrival tracks for aircraft arriving at the airport. It would also be located directly below helicopter departure tracks and immediately adjacent to touch-and-go tracks from the airport. Overflight of the Camino Real Site would be frequent and at low altitudes, given the proximity of the site to the airport. Construction and operation of a power plant like Mission Rock so near the airport would likely cause significant impacts on aircraft and pilot safety.

Obtaining site access and constructing a road to the site, which could require two access points for emergency access, presents a notable feasibility issue for the Camino Real Site. Proximity of the site to Camarillo Airport would cause a significant traffic and transportation impact. Also, the Camino Real site would require conversion of agricultural land to another use, which is an impact at this site that would not occur at the Mission Rock site. However, largely due to the site access issue and significant impact on aircraft and pilot safety, staff eliminated the Camino Real Site from further consideration.

AMARANTO SITE

The Amaranto Site covers approximately 10 acres on the west side of the city of Moorpark. The site is part of an approximately 35-acre, partially graded and unimproved property that is owned by A-B Properties. In February 2013, the Moorpark City Council (City Council) approved a new Development Agreement with the owner for the 17 industrial lots on the 35-acre property.

The February 2013 agenda report and attachments prepared by the Moorpark Community Development Department for the City Council describes how the design and improvements of the subdivision would provide for diverse industrial uses that would be consistent with the city's general plan and compatible with surrounding land uses (City of Moorpark 2013a). The subdivision includes an open space lot, private streets, and dedications for the North Hills Parkway (a planned east-west arterial road to bypass SR 118) (Los Angeles Avenue).

The site is approximately 400 feet north of the Southern Pacific Railroad (SPRR) and 1,300 feet west of Gabbert Road, which is a two-lane road with an at-grade signalized crossing at the railroad. An unpaved easement to the site from Gabbert Road crosses the SCE property east of the site. SCE's Ormond Beach-Moorpark 220/230-kV transmission lines parallel and cross over the railroad just west of Gabbert Road to connect at the Moorpark Substation southeast of the site. The 220/230-kV Moorpark-Pardee transmission lines generally parallel Gabbert Road, also connecting at the Moorpark Substation south of the SPRR.

Connecting a power plant similar to Mission Rock at this site to the electrical grid would require installing a 230-kV generator tie-line to extend east and south from the site to the Moorpark Substation, which would add to the congestion of SCE transmission lines connecting to the substation. This transmission line route is a little over one-quarter mile long. Although the Amaranto Site is very near the Moorpark Substation, the feasibility of adding transmission lines in these transmission line corridors and crossing the SPRR to reach the substation is unknown. The feasibility of burying this alternative's power lines underground, which would require crossing under the railroad tracks, is also unknown. Either way, staff assumes that extended coordination and negotiation with SPRR would be necessary to obtain the needed right-of-way (ROW) access.

Site ingress and egress for project construction would require constructing a road that could connect to Gabbert Road north of the railroad along or near the unpaved easement to the site. Site access for project construction would involve moving equipment to pass under the 220/230-kV Moorpark-Pardee transmission lines that parallel Gabbert Road. The feasibility of moving large vehicles, equipment, and power plant components from Gabbert Road to the site is unknown. Also, improvements to Gabbert Road would likely be required, and could include roadway widening to four lanes and improving traffic control at the intersection of Poindexter Avenue and Gabbert Road immediately south of the railroad.

In October 2013, Diamond Generating Corporation approached city officials with its plans to develop the 290-MW natural gas-fired Amaranto Energy Center on the site.

The developer was preparing to submit a bid for the project in response to SCE's RFO for energy resources to meet long-term LCR in the Moorpark sub-area. In January 2014, it was reported that another energy developer, Competitive Power Ventures, had obtained the controlling interest in the project and submitted a bid to SCE (Ventura County Star 2014).[4]

In November 2013, the City Council held a public workshop to consider Diamond Generating Corporation's power plant proposal. The energy developer presented its proposal at the workshop. City of Moorpark (city) staff provided its recommendation to oppose the project and submitted an agenda report stating that the power plant would violate the existing Development Agreement for the site (City of Moorpark 2013b). The report stated that this type of power generating facility is prohibited by the land use and zoning restrictions for the site and the covenant running with the land (part of the approved Development Agreement with A-B Properties).[5] City staff and City Council members expressed concerns about impacts on visual resources, air quality, and incompatibilities with existing and planned residential uses in the area. The City Council voted to oppose the power plant on a four-to-one vote.

In early December 2013, the City Attorney submitted a letter to SCE stating the city's opposition to the power plant and explaining how the proposal would constitute a breach of the Development Agreement and the covenant running with the land and that it would violate the zoning restrictions on the property. Later in December, city staff prepared an agenda report recommending that the City Council reject initiation of any proceedings to amend the covenant between the city and A-B Properties that could lead to allowance of a natural gas-fired power plant on the property. On January 15, 2014, the City Council adopted Resolution No. 2014-3260 by a unanimous vote, consistent with city staff's recommendation.

Energy Commission staff considered carrying forward the Amaranto Site for detailed analysis in this staff assessment. However, construction of a generator tie-line to connect the site to the Moorpark Substation would probably involve protracted coordination and negotiation of legal issues with SPRR to obtain the necessary ROW access. Staff considers it unlikely that the ROW issue could be resolved in time to have a project built and commissioned at the site to meet LCR needs by 2021. It is unknown

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[4] In May 2016, the CPUC approved some of the contracts selected by SCE from the RFO, including 262 MWs of natural gas-fired generation at the Puente site. Based on the results of recent contract approvals, staff assumes that the developer's presumed bid for the Amaranto Energy Center was not selected by SCE or awarded a contract.

[5] The city of Moorpark general plan designation for the property is Medium Industrial (I-2), which provides for intensive industrial uses, including light manufacturing, processing, fabrication, and other nonhazardous industrial uses. The property is zoned Limited Industrial (M-2), which allows development of industrial and quasi-industrial activities of a light manufacturing, processing, or fabrication nature while providing appropriate safeguards for adjoining industrial sites, nearby nonindustrial properties, and the surrounding community. Energy production from renewable resources is an allowable use with a conditional use permit.

whether site access could be established to safely allow the transport of people and large equipment to the site. The city has documented its opposition to a power plant like Mission Rock at the site, which would complicate the Energy Commission process to consider approval of such a project at the Amaranto Site. Such an approval would likely require an override of local LORS. For these reasons, staff eliminated the Amaranto Site from further consideration.

ALTERNATIVES EVALUATED IN DETAIL

Project alternatives evaluated in detail were selected based on their potential to attain most of the basic project objectives while reducing or avoiding any of the proposed project's significant impacts. In addition to the No-Project Alternative, staff carried forward three off-site alternatives for analysis and comparison to the proposed project: the Petrochem Refinery Off-site Alternative, the Del Norte/Fifth Street Off-site Alternative, and the Ormond Beach Area Off-site Alternative. Staff also created a conceptual design for a 200-MW Battery Energy Storage Alternative that would be installed and operated at the Mission Rock site.

The applicant briefly reviewed the Petrochem Refinery property in its AFC for the proposed project. The Del Norte/Fifth Street Off-site Alternative was also briefly analyzed by the applicant in its AFC, although it was called the Chase Site in the applicant's alternatives analysis. Energy Commission staff determined that detailed comparative analyses were needed to reach conclusions for these two sites. Therefore, staff carried forward both alternatives for full analysis and comparison to Mission Rock.

Summary discussions are provided below comparing the environmental effects of the project alternatives and the No-Project Alternative to Mission Rock. Environmental impacts that could potentially occur under a project alternative but that would not occur under Mission Rock are also discussed.

NO-PROJECT ALTERNATIVE

The Mission Rock property is almost entirely surfaced with asphalt-concrete and used as a recreational vehicle (RV) and boat storage yard. The property is owned by Mission Rock Energy Center, LLC, although another business owns and operates the storage yard. Structures on the property include a shop and storage building, an office building, and a wastewater holding tank to store residual waste from the RVs stored at the site. There are two, permitted on-site wastewater treatment systems on the property (i.e., septic systems).

Under the No-Project Alternative, the Energy Commission would not issue a license to the applicant to construct and operate Mission Rock. No action would be taken. Staff assumes that the existing uses would continue at the site, and the estimated fiscal benefits of Mission Rock would not be realized. No other use is predicted to occur in the foreseeable future if the proposed project is not approved. Therefore, the No-Project Alternative is characterized by the continuation of existing conditions at the Mission Rock site.

Several environmental impacts relating to Mission Rock's construction and operation would be avoided under the No-Project Alternative, including:

- air emissions and associated air quality and public health impacts;
- impacts on riparian habitat, listed bird species, potential electrocution of large raptors, and impacts on birds from collisions with transmission structures;
- impacts on cultural and visual resources of the Santa Clara Valley Rural Historic District;
- risk of damage to paleontological resources;
- risk of accidental release of hazardous materials;
- noise and vibration impacts;
- impacts on soil and water resources;
- impacts relating to workforce traffic and driver safety;
- impacts on aircraft and pilot safety from thermal plumes; and
- impacts on human health and the environment from removal of wastes or release of on-site contaminants.

For Mission Rock, the impacts listed above would be reduced to less-than-significant levels with mitigation measures imposed and through LORS compliance.

Continuation of existing conditions under the No-Project Alternative would have the potential to impact soil and water resources to varying degrees compared to changes to on-site conditions from construction and operation of Mission Rock. The subsection that follows compares impacts of the No-Project Alternative to potential impacts of the proposed project for soil and water resources.

Soil and Water Resources

Because nothing at the site is expected to cause a substantial physical change to the environment, the following potential impacts that staff analyzes relating to soil and water resources would not occur or would be less than significant: construction impacts, wastewater discharge impacts, and impacts on regional potable water supplies. The remaining impacts relating to flooding, storm water, and water quality are not currently causing significant impacts at the site under existing conditions; however, the existing physical conditions at the site have a higher potential for causing these impacts if Mission Rock was not constructed on the site. In other words, particular elements of the Mission Rock project would reduce the potential for these impacts to occur compared to current (baseline) conditions.

Flooding Hazard

Flooding hazard is determined by project location and elevation. The most recent flood hazards maps released by the Federal Emergency Management Agency (FEMA) show the entire Mission Rock site is located within the 1 percent annual chance flood hazard (also referred as the 100-year event floodplain) (further discussion is in the **Soil and Water Resources** section of this staff assessment; see also **Soil and Water Resources Figure 3**). The Mission Rock project proposes placing approximately 120,000 cubic feet of infill material to elevate the site. By removing the project from the floodplain, the likelihood of flooding is reduced. Because the No-Project Alternative would not change the site elevation, it would remain inside the floodplain and the flooding hazard would be **greater than Mission Rock**.

Storm Water Impacts on Water Quality

Storm water runoff that leaves the site can potentially impact the water quality of the Santa Clara River. Currently at the site, rainfall travels across the pavement as sheet flow and collects in two valley gutters, which direct the storm water to the collection point in the southwest corner of the site. From here, a storm drain releases the runoff water to an existing ditch that drains to the Santa Clara River. With the site almost entirely covered in pavement, motor oil or other mechanical fluids that unintentionally leak onto the pavement could potentially reach the Santa Clara River. Although minor drips might have negligible impacts, over time the impact could be considerable.

Construction of Mission Rock would result in changes that reduce the potential of negative impacts relating to storm water runoff:

- The amount of impervious area would decrease from over 90 percent (almost completely covered with pavement for RV and boat storage) to 37 percent (portions of the site would be covered in crushed rock or similar porous material). As a result, the peak flow and total volume of storm water leaving the site would decrease by roughly 60 percent (Calpine 2015).
- During operation of Mission Rock, the handling of toxic and hazardous substances would follow strict management regulations, including secure storage with secondary containment. Hazardous waste must also be managed in accordance with regulations for on-site storage followed by proper off-site disposal. Implementation of these and similar procedures would prevent or limit the release of these pollutants, which otherwise could significantly impact the Santa Clara River.
- Mission Rock would be subject to Ventura County's most recent storm water quality requirements for new and redevelopment projects, which became effective in 2011. Regulated projects can comply by developing a plan that uses a Low Impact Development approach, which seeks to mimic the undeveloped hydrologic properties of a particular site. Mission Rock would need to implement best management practices (BMPs) and/or features that would prevent or reduce pollutants in storm water runoff such as: source control measures, biofiltration BMPs, and treatment control measures.

Staff notes that all properties in the county must meet the water quality standards established for storm water runoff that eventually drains into regional water bodies and waterways. In this respect, both Mission Rock and the No-Project Alternative must comply with LORS to properly manage their storm water runoff in order to protect the water quality of regional water resources. However, Mission Rock would implement the preventative measures listed above that would reduce the potential for negative impacts to occur. Therefore, staff concludes that potential impacts of flooding, storm water, and water quality of this alternative would be **greater than Mission Rock**.

PETROCHEM REFINERY OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to Mission Rock on an approximately 36-acre property on the west side of State Route (SR) 33 between the Ventura River and the highway (also referred to as the Ojai Freeway) (**Alternatives Figure 1**). The property is owned by Petrochem Development I, LLC. The address is 4777 Crooked Palm Road in unincorporated Ventura County between the city of Ventura and the community of Casitas Springs. The terrain in the area bordering the highway between Ventura and Ojai is hilly. Active oil fields cover large areas on either side of SR 33 approximately 1 mile south of the site. According to Ventura County Planning Division staff, those oil fields are some of the most productive in the county. Notwithstanding the historical oil extraction uses in the area, SR 33 is recognized as eligible for designation as a state adopted scenic highway (Ventura County Planning Division 1990).

Extensive areas within the Petrochem Refinery property are within the 100-year floodplain, as shown on the FEMA preliminary flood insurance rate map for the region; **Alternatives Figure 2** shows an area for the Petrochem Refinery Off-site Alternative within the 36-acre property that avoids the 100-year floodplain but includes portions of the 500-year floodplain. The conceptual area for the alternative site covers approximately 10 acres, which is similar to the Mission Rock site. An additional portion of the Petrochem Refinery property immediately south of the conceptual boundary for this off-site alternative is also outside of the 100-year floodplain; this additional portion could provide space for temporary construction staging and parking, an area that could later be restored.

The Ojai/Ventura Bike Path borders the west side of the Petrochem Refinery property (**Alternatives Figure 3**). The bike path is on an improved revetment, which is an easement in the watershed. The areas immediately north and south of the property are undeveloped. The area along the east side of SR 33 includes single-family residential, a mobile home park, agricultural, and some commercial uses, including a dog boarding facility and a Pepsi Bottling Company plant. There are three separate residences on the east side of SR 33 that are within approximately 600 feet of the east side of the site. There are two residential areas on the east side of SR 33 that are approximately 1,000 feet northeast and 1,400 feet southeast of the approximate center point of the Petrochem Refinery Off-site Alternative.

The Brookings Institute of Photography, Ventura Campus, north of the site closed in October 2015. The Ojai Valley Sanitary District (OVSD) Wastewater Treatment Plant and the adjacent Ventura Avenue Water Purification Plant are located approximately three-quarter mile north of the Petrochem Refinery property (north of the former Brookings Institute).

The Petrochem Refinery property is an inactive former agricultural chemical plant and petroleum refinery. The agricultural chemical plant was constructed in 1953 and operated by Shell Oil Company until the 1970s. The crude oil refining processing units and tank farm were constructed around 1975 and ceased operations in 1984.

The petroleum refinery and tank farm were the subjects of an Administrative Order on Consent (AOC) submitted by the EPA to Petrochem in January 2013.[6] According to Ventura County Planning Division staff, approximately one-half acre of the site required cleanup to remove residual liquid waste and contaminated soil. Cleanup to "background level" was required. Site cleanup was directed by the EPA and the California Department of Toxic Substances Control. The owner is working with the Ventura County Environmental Health Division to finish site cleanup, which is almost complete. All aboveground storage tanks, pipes, and most buildings have been removed, and asbestos removal is complete. The owner is required to remove and dispose of the concrete on the site (possibly the concrete pads where the tanks were located). Ventura County officials will complete inspections and sign-off on the demolition and remediation. County staff expects that the EPA will issue a "No Further Action" letter, possibly in 2017. A 2016 Google Earth image shows the site following removal of the tanks and most of the other structures.

Of the original structures, 11 buildings remain on the Petrochem Refinery property, including a two-story office building and warehouses. The buildings have been gutted and are considered structurally sound and can be reused. The two 1950s-era spheres on the site that were originally used to store liquid compressed ammonia have been cleaned and inspected (**Alternatives Figure 3**). The property owner, Ventura County Planning Division staff, and others are interested in preserving the spheres.

According to Ventura County Planning Division staff, the owner submitted a Planned Development Permit for "transportation services" on the upper portion of the Petrochem site (staging/storage of new KIA automobiles) and "contractor services storage" (oil industry materials, trucks, etc.) on the lower two-thirds of the site. County staff describes the proposal as a "temporary gap measure" by the owner. Although the uses are described by the applicant as temporary, the Planned Development Permit would have no expiration date.

[6] According to the EPA, AOCs, and other administrative agreements issued by the EPA, are consensual, negotiated agreements pursuant to sections 104, 106(a), 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), that obligate parties to perform response activity (e.g., removal, remedial investigation, feasibility study, remedial design) and/or reimburse EPA for costs incurred under the federal Superfund program.

Water requirements for Mission Rock include approximately 67 acre-feet per year of recycled water for all power plant process uses, although actual water use is expected to be much lower than that. The Petrochem Refinery property is in an area that is serviced by the city of Ventura (city) for potable water and the OVSD for sewer. The OVSD Wastewater Treatment Plant treats wastewater to tertiary standards before it is discharged to the lower Ventura River (Walter 2015). No recycled water source is available to the Petrochem Refinery Off-site Alternative site. The city's water distribution system includes a distribution main that parallels N. Ventura Avenue near the Petrochem Refinery property (**Alternatives Figure 3**). Staff assumes this off-site alternative could potentially tap into the distribution main for water for the site. Similar to Mission Rock, this off-site alternative would include on-site storage of water for power plant process uses.

A SoCalGas high-pressure natural gas distribution pipeline parallels N. Ventura Avenue near the eastern site boundary (**Alternatives Figures 1** and **3**). Providing natural gas to this off-site alternative could potentially be accomplished by constructing a 1,000- to 1,100-foot-long pipeline connection along Crooked Palm Road north to near its intersection with N. Ventura Avenue.

The Petrochem Refinery Off-site Alternative would require constructing an on-site power plant switchyard. Connecting this alternative to the electrical grid would require installing transmission structures and a new, single-circuit, three-phase, 230-kV generator tie-line. The new transmission line could parallel the existing 66-kV transmission line extending east from the site and then southeast to parallel the Santa Clara-Goleta 220/230-kV transmission line to the Santa Clara Substation, for a total distance of approximately 8 miles (**Alternatives Figure 4**). This interconnection point is the same as proposed for Mission Rock. Based on the Mission Rock project description (and with similar assumptions for this alternative), the 230-kV generator tie-line would be supported by steel structures ranging from approximately 80–200 feet tall across hilly terrain.

Land Use Planning

To determine potential consistency of the Petrochem Refinery Off-site Alternative with land use LORS, staff reviewed the *Ventura County General Plan Goals, Policies, and Programs* (general plan) and *North Ventura Avenue Area Plan* (area plan), and the *Ventura County Non-Coastal Zoning Ordinance* (zoning ordinance). The general plan land use designation for the site is Existing Community – Urban Reserve, and the area plan land use category is Industrial. The Existing Community designation "may include uses, densities, building intensities, and zoning designations which are normally limited to Urban designated areas but do not qualify as urban centers" (Ventura County Planning Division 2016). The general plan states that the Urban Reserve overlay designation "is applied to all unincorporated land within a city's adopted sphere of influence." However, under this and certain other land use designations, "more intense development could not occur on affected lands until they are annexed." The zoning is General Industrial (M-3), which is the same zoning district as the Mission Rock site.

The area plan is a joint document of Ventura County and the city of Ventura (city) for the North Ventura Avenue area (Ventura County Planning Division 1990). It is intended to provide a basis for future actions in the area prior to annexation to the city. In describing the Industrial land use category, the area plan states: “General industrial development should be ‘manufacturing’ rather than ‘office park’ in character. Any new or altered industrial development of either type should provide adequate buffers to protect adjacent residential areas, and should not have an adverse effect on the Ventura River.”

The area plan policy regarding industrial buffering states that new or expanded industrial development adjacent to residential areas must provide buffers to adequately protect residential areas from any intrusion or nuisance factors generated by the industrial development. Industrial uses adjacent to the Ventura River must be compatible with the goal of preserving the river’s natural attributes, and development should not be permitted that would result in its degradation.

According to Ventura County Planning Division staff, a proposal for a power plant at the Petrochem Refinery property would be referred to the city for processing. The city and the property owner would execute an “out of area service agreement” for water service, which would require approval by the Ventura Local Agency Formation Commission. The local municipalities would have to determine consistency of the proposal with both general plans. It would also have to be determined that annexation of the area where the site is located would not be required before processing such a proposal.

According to the zoning compatibility matrix in the area plan, the General Industrial (M-3) zone is compatible with the Industrial land use category (Ventura County Planning Division 1990). Section 8105-5 of the zoning ordinance lists “public utility facilities” as an allowable use in this zone subject to approval of a CUP by the Planning Commission. The applicant’s AFC references a communication with Ventura County staff confirming that “[p]ower generation facilities are considered Public Utilities in the Ventura County zoning ordinance and…a power plant is a permitted use on…General Industrial zones” (Calpine 2015). The zoning ordinance lists “aboveground transmission lines” as an allowable use subject to approval of a CUP by the Planning Director. Section 8111-1.2 of the zoning ordinance describes the requirements for discretionary entitlements, including permit approval standards for CUPs. The proposed development must:

a) be consistent with the intent and provisions of the County’s General Plan and Division 8, Chapters 1 and 2, of the Ventura County Ordinance Code;

b) be compatible with the character of surrounding, legally established development;

c) not be obnoxious or harmful, or impair the utility of neighboring property or uses;

d) not be detrimental to the public interest, health, safety, convenience, or welfare;

e) be compatible with existing and potential land uses in the general area where the development is to be located;

f) be constructed on a legal lot; and

g) be approved in accordance with the California Environmental Quality Act and other applicable laws.

The main structure height for a development in the M-3 zone is to be specified by the permit. However, when the site is within 100 feet of an area zoned for residential use, the maximum height of the main structure is limited to 60 feet (Section 8106-1.2 of the zoning ordinance). The Petrochem Refinery Off-site Alternative is adjacent to an area along SR 33 that is zoned Rural Exclusive (RE), which provides for rural residential areas and certain other uses that are compatible with rural residential communities; no residences are located in the area adjacent to the site with the RE zoning designation. Staff assumes that a project similar to Mission Rock at this site would be subject to the 60-foot height limit. The applicant's AFC lists the approximate dimensions of Mission Rock's major project structures; the tallest structures would be the five, 60-foot-tall exhaust stacks (Calpine 2015). Development of a project similar to Mission Rock at this alternative site would potentially conform to the height limit.

Development standards for the M-3 zone specify that metal buildings must have exterior surfaces constructed or faced with stainless steel, aluminum, paint, baked enamel, or a similar type finish (Section 8109-3.4 of the zoning ordinance). The development must be reasonably screened from view from any street by other buildings or walls, fences, earth mounds, or landscaping, or shall not be located within 100 feet of the street centerline. Outside storage and operations yards must be fenced for security and public safety at the property line.

Although the Energy Commission would have in lieu permitting authority for an electric generating facility at the Petrochem Refinery Off-site Alternative, Section 25506 of the Warren-Alquist Act requires the Energy Commission to request comments and recommendations from appropriate government agencies (e.g., a local municipality) regarding the design, operation, and location of the facilities in relation to environmental quality, public health and safety, and other factors on which they may have expertise.

Staff concludes that the Petrochem Refinery Off-site Alternative would be potentially consistent with applicable county and city land use LORS.

Potential to Attain the Project Objectives

The primary objective addresses developing a project that combines dispatchable, flexible, and efficient energy generation with energy storage technology to meet the local capacity requirement (LCR) need in the Moorpark sub-area of the Big Creek/Ventura local reliability area by 2021, and contributing to the integration of renewable energy resources into the electric power grid.

The second objective specifies constructing and operating a 275-MW natural gas-fired power plant to meet the need for local capacity following the expected retirement of once-through cooled (OTC) generation facilities in Southern California. An alternative site in the Moorpark sub-area could, in theory, provide a location to develop a project similar to Mission Rock. However, it is uncertain whether the applicant could obtain site control and complete environmental review and licensing to have a project built and commissioned at the Petrochem Refinery property to meet LCR needs by 2021.

The last two objectives address siting the project as near as possible to an SCE substation with available transmission capacity to serve the Moorpark sub-area and reusing a brownfield site in an industrial area. Assuming staff's conceptual route to connect a project at the Petrochem Refinery Off-site Alternative to the grid is potentially feasible; it provides a reasonably direct route to the Santa Clara Substation along an existing utility corridor. This is the same grid connection point as proposed for Mission Rock. The site is a brownfield site subject to the regulatory authorities of local, state, and federal agencies responsible for overseeing site cleanup.

If construction and operation of the Petrochem Refinery Off-site Alternative was feasible, this alternative could potentially satisfy all of the project objectives.

Potential Feasibility Issues

Addressing feasibility of an alternative takes into account several factors, including whether the project proponent can reasonably acquire, control, or otherwise have access to the alternative site (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(1)). The applicant does not have control of the Petrochem Refinery Off-site Alternative site, which is owned by Petrochem Development I, LLC. Developing a project similar to Mission Rock at this site would require the applicant to negotiate a property purchase or lease agreement with the owner. Depending on the outcome of such a negotiation, project viability could be affected.

Another factor affecting feasibility of an alternative addresses availability of infrastructure. Constructing and operating a project similar to Mission Rock at the Petrochem Refinery Off-site Alternative site would require a new power plant design proposal for the site with plans and analyses for off-site utility connections. Although connecting at the Santa Clara Substation would require constructing an approximately 8-mile-long transmission line, the interconnection point would be the same as is planned for Mission Rock. However, the applicant withdrew Mission Rock from the California ISO interconnection queue Cluster 9, and staff is now unable to determine whether any *downstream* facilities (i.e., beyond the first point of interconnection with the grid) would be required for an interconnection at the Santa Clara Substation for the proposed project or this alternative.

Additional planning and analysis would be required to obtain access for construction along a linear route for the new transmission line.

The work to gain site control and plan its grid connection and other utility connections would delay the project, which could affect its viability as an alternative. A new application would have to be researched, written, and submitted by the applicant, and processed by the Energy Commission, further impacting viability.

Environmental Analysis

Alternatives Table 1 summarizes comparative impacts of the proposed project to the same or similar potential impacts of the Petrochem Refinery Off-site Alternative. The comparative impacts are stated using these terms:

- Less than Mission Rock
- Similar to Mission Rock
- Same as Mission Rock
- Greater than Mission Rock

Impact conclusions for the proposed project and the comparative impacts for the alternatives are indicated using these abbreviations:

— = no impact

B = beneficial impact

LS = less-than-significant impact, no mitigation required

SM or PSM = significant or potentially significant impact that would be reduced to less than significant with implementation of mitigation measures and/or through compliance with applicable LORS

SU or PSU = significant and unavoidable or potentially significant and unavoidable impact that could not be reduced to less than significant

Comparative discussions for each environmental effect listed below follow the table.

Alternatives Table 1
Summary Comparison of Impacts of Mission Rock to the Petrochem Refinery Off-site Alternative

Environmental Effect	Mission Rock	Petrochem Refinery Off-site Alternative
Agriculture, Forestry Resources, and Land Use		
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (maps prepared pursuant to the Farmland Mapping and Monitoring Program) to non-agricultural use	LS	Less than Mission Rock (LS)
Conflict with existing zoning for agricultural use, or a Williamson Act contract	LS	Less than Mission Rock (LS)
Conflict with existing zoning or cause rezoning of forest land, timberland, or timberland that is zoned Timberland Production	—	—
Cause loss or conversion of forest land to non-forest use	—	—
Cause a change in the environment that could result in conversion of Farmland to non-agricultural use or forest land to non-forest use	LS	Less than Mission Rock (LS)
Physically divide an established community	—	—
Conflict with any applicable habitat conservation plan or natural community conservation plan	—	—
Conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	LS	Similar to Mission Rock (LS)
Air Quality		
Criteria Pollutants		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Similar to Mission Rock (SM)
Greenhouse Gas		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Similar to Mission Rock (SM)
Biological Resources		
Project Construction impacts		
Impacts on riparian habitat (state waters)	SM	—
Impacts on special-status plants and wildlife (excluding nesting birds) on the site	—	No impact (—) or greater than Mission Rock (LS or PSM)
Impacts on special-status plants and wildlife (excluding nesting birds) along the transmission line	—	No impact (—) or greater than Mission Rock (LS or PSM)
Impacts of noise on nesting birds (non-listed species)	SM	Similar to Mission Rock (PSM)
Impacts of noise on nesting birds (listed species)	SM	Less than Mission Rock (PSM)
Impacts of lighting, storm water, and invasive weeds on biological resources	SM	Similar to Mission Rock (PSM)
Project Operations impacts		
Impacts of noise on nesting birds (non-listed and listed species)	LS	Greater than Mission Rock (PSM)

Alternatives Table 1
Summary Comparison of Impacts of Mission Rock to the Petrochem Refinery Off-site Alternative

Environmental Effect	Mission Rock	Petrochem Refinery Off-site Alternative
Impacts of nitrogen deposition on biological resources	—	—
Impacts of transmission line electrocution on bird species (large raptors)	SM	Similar to Mission Rock (PSM)
Impacts of transmission lines/poles relating to the risk of collision for listed bird species	SM	Greater than Mission Rock (PSM)
Cultural Resources		
Impacts on surficial archaeological and ethnographic resources	—	—
Impacts on buried archaeological resources	PSM	Same as Mission Rock (PSM)
Impacts on built environment resources	SM	Less than Mission Rock (PSM)
Geology and Paleontology		
Risk of damage to paleontological resources	PSM	Similar to Mission Rock (PSM)
Potential impacts on geological or mineralogical resources	—	—
Risk of surface fault rupture	LS	Similar to Mission Rock (LS)
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Similar to Mission Rock (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	LS	Similar to Mission Rock (LS)
Hazardous Materials Management		
Potential for impacts on people off the site from an on-site release	PSM	Similar to Mission Rock (PSM)
Risk of accidental release of hazardous materials during transport	PSM	Similar to Mission Rock (PSM)
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	Greater than Mission Rock (PSM)
Public Health		
Potential for on-site impacts on human health and the environment relating to toxic emissions	PSM	Similar to Mission Rock (PSM)
Potential for project area impacts from emissions of toxic air pollutants	PSM	Similar to Mission Rock (PSM)
Potential for impacts on human health and the environment relating to existing health status	PSM	Similar to Mission Rock (PSM)
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	Similar to Mission Rock (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	—	—
Adversely impact acceptable levels of service for law enforcement, parks and recreation, public libraries, and schools	LS	Similar to Mission Rock (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees	B	Similar to Mission Rock (B)
Soil and Water Resources		

Alternatives Table 1
Summary Comparison of Impacts of Mission Rock to the Petrochem Refinery Off-site Alternative

Environmental Effect	Mission Rock	Petrochem Refinery Off-site Alternative
Construction-related impacts	PSM	Similar to Mission Rock (PSM)
Storm water impacts	PSM	Same as Mission Rock (PSM)
Flooding hazard	LS	Similar to Mission Rock (LS)
Wastewater discharge impacts	SM	Similar to Mission Rock (SM)
Impacts on water quality	PSM	Similar to Mission Rock (PSM)
Impacts on water supply	—	—
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Similar to Mission Rock (PSM)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Greater than Mission Rock (PSM)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than Mission Rock (PSM)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Similar to Mission Rock (LS)
Impacts on aircraft and pilot safety from thermal plumes	PSM	Less than Mission Rock (PSM)
Impacts on navigation signals and aircraft traffic relating to location of exhaust stacks	Indeterminate	Less than or similar to Mission Rock (Indeterminate)
Impacts on navigation signals and aircraft traffic relating to location of transmission lines	Indeterminate	Less than or similar to Mission Rock (Indeterminate)
Potential for exhaust stacks to physically obstruct aircraft arrival/departure tracks	LS	Similar to Mission Rock (LS)
Visual Resources		
Substantial adverse effect on a scenic vista	—	—
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	SM	Less than Mission Rock (PSM)
Substantially degrade the existing visual character or quality of the site and its surroundings	SM	Less than Mission Rock (PSM)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Similar to Mission Rock (PSM)
Waste Management		
Potential for on-site impacts on human health and the environment relating to potential waste discharges	PSM	Similar to Mission Rock (PSM)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	PSM	Similar to Mission Rock (PSM)
Potential for impacts on human health and the environment relating to past or present soil or water contamination	PSM	Greater than Mission Rock (PSM)
Worker Safety and Fire Protection		

Alternatives Table 1
Summary Comparison of Impacts of Mission Rock
to the Petrochem Refinery Off-site Alternative

Environmental Effect	Mission Rock	Petrochem Refinery Off-site Alternative
Risks/hazards to on-site workers	PSM	Similar to Mission Rock (PSM)
Emergency response time	—	—
Risk of significant drawdown of emergency medical services	—	—

Agriculture, Forestry Resources, and Land Use

The transmission line and structure foundations for the Petrochem Refinery Off-site Alternative would predominantly cross farmland designated by the Farmland Mapping and Monitoring Program (FMMP) as Grazing, with smaller portions of the line crossing Unique, Farmland of Statewide Importance, and Farmland of Local Importance. Like Mission Rock, the transmission line for this alternative would cross land subject to a Williamson Act contract, which is a compatible use with any agricultural preserve. Ventura County provides threshold criteria and standard methodologies for determining whether a project could have a significant effect on the environment. Based on significance thresholds for loss of Important Farmland (Prime/Statewide, Unique, or Local), this alternative would have a less-than-significant impact on farmland (Ventura County Planning Division 2011). For this alternative, a smaller amount of Important Farmland would be impacted compared to Mission Rock; therefore, this impact is considered **less than Mission Rock**. Like Mission Rock, the impact conclusion is less than significant. Staff reached this conclusion because there would be fewer transmission structures installed on Ventura County protected farmland compared to the proposed transmission line route for Mission Rock. The majority of FMMP classified farmland, grazing, is not included among the farmland types listed in the *Ventura County Initial Study Assessment Guidelines* (Ventura County Planning Division 2011).

This off-site alternative would not cause the loss of forest land, and no impact would occur, which is the same conclusion as for Mission Rock. No land affected by the proposed project or this alternative is zoned as forest land or Timberland Production, and **no impact** would occur.

The transmission line would cross open space and agricultural land and the Petrochem Refinery Off-site Alternative site is a former industrial use site; therefore, construction of this alternative would not physically divide an existing community. This alternative would have **no impact** relating to this significance threshold, which is the same conclusion as for Mission Rock.

The alternative site and linears are not located in an area covered by a habitat conservation plan or natural community conservation plan. This alternative would have **no impact** on a habitat conservation plan or natural community conservation plan, which is the same conclusion as for Mission Rock.

As discussed above, the Petrochem Refinery Off-site Alternative could potentially be constructed and operated to be consistent with applicable land use LORS. Staff also assumes that mitigation measures could reduce significant environmental impacts to less-than-significant levels. Therefore, with implementation of project and site design features, and mitigation measures imposed to reduce impacts to less than significant, staff concludes that potential conflicts with land use LORS would be resolved, **similar to Mission Rock**.

Air Quality

The Petrochem Refinery Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative are located within the jurisdiction of the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality (attainment status of criteria pollutants) is the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

Under the Petrochem Refinery Off-site Alternative, approximately 275 MWs of natural gas-fired generation would be constructed and operated at the alternative site. It is expected that construction related air quality and greenhouse gas impacts for the Petrochem Refinery Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, and numbers and types of equipment used would be similar for the construction at both sites. The Petrochem Refinery Off-site Alternative is surrounded by similar, complex topography as the Mission Rock site. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of similar mitigation measures that would be recommended under the proposed project.

Biological Resources

The Petrochem Refinery property is an inactive former agricultural chemical plant and petroleum refinery. Staff attended a site visit on March 28, 2017, and viewed the site from just inside the property entrance. The site has buildings, paved roads, and cement foundation pads, with vegetation occurring in undeveloped areas. Since the area was disturbed and previously developed, the vegetation is likely to be mostly introduced non-native species. The Ventura River runs north/south to the west of the site. The Ventura River is habitat for least Bell’s vireo, southwestern willow flycatcher, and other nesting birds.

Staff also analyzed the Petrochem Refinery Off-site Alternative using available data sets, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), results of literature reviews, and aerial photographs.

Project Construction Impacts

This alternative site is near the Ventura River but outside of the regulatory floodway (see **Alternatives Figure 2**), and no removal of riparian vegetation near the river would occur; therefore, there would be **no impacts** on riparian habitat. Special-status plants have a low potential to occur on the site since the area was previously disturbed and developed. Special-status wildlife (excluding nesting birds) may be found or might migrate through and forage on the site. Therefore, potential impacts on special-status plants or wildlife (excluding nesting birds) could be **greater than Mission Rock** due to proximity to natural habitat (riparian). Should impacts be identified, the comparative impact conclusion could be less than significant or potentially significant. Mitigation measures like those recommended for Mission Rock would be implemented, if needed, to reduce potential impacts to less than significant. (Under CEQA, project alternatives are evaluated in a lesser level of detail than the proposed project. Surveys for biological resources will not be conducted for the alternatives to determine the presence or absence of special-status biological resources for this alternative).

The transmission line route would traverse native habitat through the hillsides east of the Petrochem Refinery Off-site Alternative before connecting at the Santa Clara Substation. A review of the CNDDB shows rare plant populations near this alternative's transmission line route but did not indicate any special-status wildlife species near the alignment. Potential impacts on special-status plants or wildlife (excluding nesting birds) could be **greater than Mission Rock** because of known rare plant populations near the transmission line route. Mitigation measures like those recommended for Mission Rock would be implemented to reduce potential impacts on these resources to less than significant.

The same types of construction equipment would be used for this alternative; therefore, levels of noise generated would generally be similar. Construction noise could disturb nesting birds protected under the Migratory Bird Treaty Act and Fish and Game Code sections 3503 and 3513. Suitable habitat for nesting birds in general is located in areas adjacent to and/or near the Mission Rock site and this alternative site. Therefore, potential impacts of construction noise on nesting birds would be **similar to Mission Rock** and potentially significant. Mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

Construction of Mission Rock would create noise levels that would disturb the least Bell's vireo, a state and federally listed endangered species, breeding in adjacent riparian habitat along the Santa Clara River. Critical habitat for the southwestern willow flycatcher exists along the Ventura River adjacent to the Petrochem Refinery Off-site Alternative. This habitat is approximately 225 feet from the Petrochem Refinery Off-site Alternative footprint, whereas suitable least Bell's vireo habitat is adjacent to and within 10 feet of the Mission Rock site. Because construction noise would be further from suitable habitat under this alternative, potential impacts on listed bird species would be **less than Mission Rock**.

The timeline and equipment used during demolition and construction under this alternative would be similar to Mission Rock. General construction and demolition impacts on biological resources such as lighting, storm water discharge, and the spreading of invasive weeds are expected to occur regardless of siting. Although the site is adjacent to the Ventura River, the lands immediately abutting the Petrochem Refinery Off-site Alternative are disturbed and were developed over several decades. General impacts from construction and demolition are considered to be **similar to Mission Rock** and potentially significant. Mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

Project Operations Impacts

Impacts on nesting birds (non-listed and listed species) from operational noise at Mission Rock are expected to be less than significant, requiring no noise mitigation measures. At the Petrochem Refinery Off-site Alternative, suitable nesting habitat for birds (including least Bell's vireo and southwestern willow flycatcher) is approximately 225 feet from the alternative site. This is a greater distance than the distance of suitable habitat (10 feet) for Mission Rock. The Petrochem Refinery Off-site Alternative also is located in a geographic area with steep cliffs to the west, and it sits in a narrower valley which would influence the distribution and direction of operational noise in the area. Mission Rock is surrounded by a wide valley and agricultural fields, and the hills are a greater distance away. Staff concludes that the potential for operational noise to impact nesting birds could be **greater than Mission Rock** due to the narrower valley and steep cliffs in the vicinity of this off-site alternative. If this impact occurred, mitigation measures could include constructing a sound wall(s) at strategic locations and installing insulation and/or enclosures around power block equipment to reduce operational noise.

There are no impacts from Mission Rock relating to nitrogen deposition. Staff's review of Google Earth imagery identified no sensitive habitat within several miles of the alternative site. Therefore, there would be **no impacts** from nitrogen deposition at the Petrochem Refinery Off-site Alternative site, which is the same conclusion as for Mission Rock.

This alternative would require installation of approximately 8 miles of transmission line to connect to the Santa Clara Substation. The new transmission line could present an electrocution hazard to large raptors if not constructed according to the Avian Power Line Interaction Committee guidelines to protect raptors (Avian Power Line Interaction Committee 2012). The Mission Rock site would also require construction of power lines using the same guidelines to fully mitigate potentially significant impacts; therefore, the Petrochem Refinery Off-site Alternative would have potential impacts from transmission line electrocution of avian species **similar to Mission Rock**. In addition, the impacts from transmission line collisions could impact listed species (southwestern willow flycatcher and willow flycatcher) during nocturnal migration. These impacts are considered significant. Mission Rock has a 6.6-mile-long transmission line while the Petrochem Refinery Off-site Alternative is approximately 8 miles long. Mission Rock would cause an estimated 10 listed species deaths for the life of the project.

Estimated deaths from the approximately 8-mile-long transmission line for listed southwestern willow flycatcher and willow flycatcher would almost double at 19.7 for the life of the project (30 years) under this alternative.

Therefore, potential impacts on listed avian species from the installation of a transmission line would be **greater than Mission Rock** due to the corresponding increase in the potential risk for collision. Mitigation measures like those recommended for Mission Rock would be implemented to reduce impacts to less than significant.

Cultural Resources

The Petrochem Refinery property was formerly used for production of anhydrous ammonia, urea manufacturing, and crude oil refining. There are 11 buildings and structures remaining on the property. At least five buildings have been demolished over the years, along with several other structures. These resources were recently evaluated in a report to determine eligibility for listing on the California Register of Historical Resources (CRHR) for purposes of CEQA; the resources were recommended not eligible in the report conclusions (Triem and Stone 2016).

Staff conducted a record search at the South Central Coastal Information Center (SCCIC) at California State University at Fullerton in March 2017. The record search indicated that 27 cultural resource studies were conducted within one-half mile of the Petrochem Refinery property, only one of which occurred on the parcels included with this alterative. Five archaeological resources, including prehistoric and historic sites and 10 built environment resources (**Alternatives Table 2),** were recorded within one-half mile of the Petrochem Refinery property. **Alternatives Figure 5** shows the locations of built environment resources.

Staff walked the boundaries of the property in March 2017 in an attempt to identify potential areas that could be used by contemporary Native American groups for hunting or gathering activities. The entirety of the site is denuded of most native vegetation except for weeds, likely precluding any hunting or gathering on the site, but it is possible the Ventura River corridor adjacent to the site could be used for this purpose.

The archaeological and ethnographic setting presented in **Cultural Resources Appendix A** of this staff assessment also applies to this alternative.

Alternatives Table 2
Built Environment Resources Previously Recorded within One-half Mile of the Petrochem Refinery Property

Reference Number	Description	Type	Address	Year Built	CRHR Eligible
56-001109	SPRR Railroad from Ventura to Ojai	Structure	Parallel to SR 33	1898	Potentially
56-001554	Wooden corrals and cattle chute	Structure	Foothills above east side of Hwy 399, 3.8 miles north of Ventura		Unlikely
56-001555	Historic brick scatter	Site	East Side of Hwy 399, 3.8 miles north of Ventura		Unlikely
56-001557	House, outbuildings, historic trash scatter	Building, Site	Manuel Canyon Road and N. Ventura Avenue	c. 1900	Potentially
56-150031	Weldon-Canet Residence	Building (demolished)	East Side of Hwy 399, 3.8 miles north of Ventura	1885	Potentially
56-150032	Mill School	Building	East Side of Hwy 399, 3.8 miles north of Ventura	1926	Potentially
56-150033	Ventura Water Works	Building	6855 N. Ventura Ave	1939	Potentially
56-150034	Canada Larga House (demolished)	Site	234 Canada Larga Road	c. 1890	Unlikely
56-150035	San Gertrudis Chapel Site and Monument	Building, Site	North of Weldon Canyon and East of SR 33	1792	Yes
56-150098	Mission Aqueduct	Structure	234 Canada Larga Road	1782	Yes

Impacts on Surficial Archaeological and Ethnographic Resources

A review of historical topographic maps, archival Google Earth imagery, and maps of ethnographic villages did not reveal any surficial archaeological resources or ethnographic resources on the parcels included with this alternative. There is an unnamed ethnographic village about 1 mile north of the Petrochem Refinery property (King 1971:30), which may be associated with the San Gertrudis chapel. The 1904 U.S. Geological Survey 7.5 minute topographic map of the Ventura quadrangle shows the railroad tracks and four structures on the west side of N. Ventura Avenue near the property. The 1941 map of the same quadrangle shows the railroad and about 10 structures in close proximity to the alternative site. By 1951, the map shows most of these structures were removed or destroyed, but the railroad remains. The original agricultural chemical plant was constructed on the property shortly after publication of the 1951 map, and the surface area of the property was disturbed during construction of pavement and buildings. Staff also walked portions of the property in March 2017 and did not see any areas that were unpaved or undisturbed that would likely have surface artifacts or ethnographic resources. Staff predicts that surficial archaeological and ethnographic resources are unlikely to be found at the Petrochem Refinery property, including the alternative site within the property. Staff concludes that, like Mission Rock, **no impacts** on such resources would occur.

Impacts on Buried Archaeological Resources

The Petrochem Refinery property is located on geologic deposits classified as Qht, Holocene stream terrace deposits. These deposits are generally low-energy, depositional environments that can preserve intact archaeological deposits.

A record search of the property indicated that several significant archaeological sites with both prehistoric and historic components were excavated in the vicinity of this site. Despite ground disturbance at the site, there remains a high potential to encounter buried archaeological resources based on the geomorphological characteristics at the site, the close proximity of the river, and an archaeological inventory of several significant deposits nearby. The proposed Mission Rock project also has a high potential for encountering buried archaeological resources; therefore, these impacts are the **same as Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potential impacts on buried archaeological resources to a less-than significant level.

Impacts on Built Environment Resources

Seven built environment historical resources are located within one-half mile of the Petrochem Refinery Off-Site Alternative site and were previously evaluated and recommended ineligible as historical resources (Triem and Stone 2016). The 2016 study, *Historic Resources Report 4777 Crooked Palm Road, Ventura*, concluded that the resources were historically significant but lacked sufficient integrity to be considered historical resources. On February 13, 2017, the Ventura County Cultural Heritage Board (CHB) reviewed the 2016 findings, and recommended to the Ventura Planning Division on a 5-0 vote that three of the seven built environment resources, including the spheres, rail siting, and the administration building, were eligible for listing on the local register as individual landmarks. The CHB recommended that any future project on the site could mitigate potential impacts on these resources by restoring the administration building according to the Secretary of the Interior Standards for Rehabilitation, and preserving the spheres and rail siting in-place. Impacts on the remaining four, built environment resources previously recorded within one-half mile of the Petrochem Refinery property that could result from construction of the facility itself would be considered less than significant. Staff analyzed the administrative record from the CHB and concludes potential impacts on built environment historical resources from this off-site alternative to be less than significant with mitigation measures incorporated.

Although a transmission line route for the Petrochem Refinery Off-site Alternative could potentially be located along existing transmission line corridors, the feasibility of the route shown in **Alternatives Figure 4** is unconfirmed, and staff has no survey data from which to draw conclusions. However, when compared to the proposed project, the transmission line in areas with potential to contain built environment cultural resources would have a lower potential to impact built environment cultural resources. Nevertheless, in-lieu of an intensive-level survey, staff must presume that resources are present within the transmission line right-of-way (ROW) that could be impacted by construction of the transmission line as well as the natural gas pipeline.

These impacts, should they occur, would likely be similar in nature to those that have been identified from construction of the Mission Rock transmission line but significantly less severe. Because the proposed project would likely result in a far greater number of impacts on built environment cultural resources, staff concludes that potential impacts on such resources are **less than Mission Rock** for this alternative site. (See the **Cultural Resources** section of this staff assessment for an assessment of impacts of the proposed project on the Santa Clara Valley Rural Historic District.) Mitigation measures would be recommended to avoid, minimize, or compensate for potential impacts under this alternative, which would likely reduce impacts on built environment resources to less-than-significant levels.

Conclusion

The Petrochem Refinery Off-site Alternative would cause no impacts on surficial archaeological or ethnographic resources, but could impact buried archaeological resources, the **same as Mission Rock**. These impacts could be reduced to a less-than-significant level through implementation of a cultural resources monitoring and mitigation plan. Although no built environment resources of historic age are identified within this alternative site footprint, three resources exist immediately adjacent to the site and within the Petrochem Refinery property. Staff presumes that historical resources exist within the transmission line corridor that could be significantly impacted. Impacts on unidentified resources could likely be reduced to less-than-significant levels through mitigation measures that avoid, minimize, or compensate for potential impacts. Given the considerable number of built-environment resources impacted by the proposed project, staff concludes that impacts on these resources under the Petrochem Refinery Off-site Alternative would likely be **less than Mission Rock**.

Geology and Paleontology

The Petrochem Refinery Off-site Alternative is located over 10 miles west-northwest (as the crow flies) of the proposed Mission Rock site. Topography of the property appears to be generally flat. The site was previously graded and developed. The soil near the surface has been disturbed as a result of previous construction. On-site subsurface soil conditions are similar to Mission Rock (i.e., underlying sediments are similar); therefore, the soil would behave the same as the disturbed soil at Mission Rock, with construction of a power plant on the alternative site. Ground disturbance activities similar to that required to construct Mission Rock would be required for this alternative.

The transmission line would be longer than proposed for Mission Rock (approximately 8 miles compared to 6.6 miles for the proposed project), and a portion of the line where transmission structures could be installed would be located on Quaternary marine terrace deposits of low paleontological significance, similar to Mission Rock. Therefore, this alternative would have a similar potential to encounter and damage buried paleontological resources. Although paleontological resources have limited potential to occur, if such resources were encountered during excavation, potential impacts could be significant.

Implementation of a paleontological resources monitoring program, such as the one described in the **Geology and Paleontology** section of this staff assessment (see Conditions of Certification **PAL-1** through **PAL-8**), would be required to reduce the severity of impacts to a less-than-significant level. Staff concludes that the relative severity of the potential impact under this alternative is **similar to Mission Rock**.

This alternative would have **no impacts** on mineralogical or geological resources because such resources are not present at the site.The site is located between the Pitas Point and Ventura fault zones, but there are no known active faults on the alternative site. Therefore, there is a less-than-significant fault rupture hazard, which is **similar to Mission Rock**.

This alternative would be subject to the same, very strong levels of earthquake-related ground shaking as Mission Rock. The Petrochem Refinery Off-site Alternative would also be subject to the same, or slightly greater, potential for soil failure caused by liquefaction and/or dynamic compaction compared to Mission Rock. For Mission Rock, the project would include construction of an engineered pad, which would resolve any potential soil failure at the site. These potential impacts at this alternative site would require implementation of Condition of Certification **GEO-1** to reduce potential impacts to less than significant, **similar to Mission Rock**.

This alternative would be subject to the same risk of potential excessive settlement or expansion of soils as Mission Rock. The potential impacts from these conditions are less than significant, **similar to Mission Rock**.

Hazardous Materials Management

The Petrochem Refinery Off-site Alternative would present a nearly identical hazardous materials risk profile as described for the Mission Rock site. Both would use natural gas as fuel and ammonia for selective-catalytic reduction of oxides of nitrogen in the combustion exhaust. Since the hazardous risk profiles are similar, this off-site alternative would present potentially significant impacts that are **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potentially significant impacts to less than significant.

Noise and Vibration

The nearest noise-sensitive land use to Mission Rock is two residences located approximately 1,125 feet east of the site. The nearest noise-sensitive land use to the Petrochem Refinery Off-site Alternative includes three residences on the east side of SR 33 that are within approximately 600 feet of the east side of the site. There is a residential community northeast of the site, which is approximately 600 feet from the northeast corner of the alternative site to the southwest corner of the residential community. These are the approximate minimum distances from potential noise generating uses at the site to the nearest residences. Due to this proximity, noise and vibration impacts associated with this alternative would be **greater than Mission Rock**; implementation of mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

Public Health

As noted in the **Public Health** section of this staff assessment, the public health LORS that are cited and discussed are intended to ensure that all emissions from construction and routine operations for the proposed project or this alternative would be controlled to ensure levels without significant health impacts in the project or alternative site area.

The Petrochem Refinery Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative would be located within the jurisdiction of the same local air district, the VCAPCD. The existing regulations of the toxic air pollutants of concern in this staff analysis are the same for the alternative site and the Mission Rock site.

It is expected that construction-related toxic air emissions for the Petrochem Refinery Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, numbers, and types of equipment used would be similar for the construction at both sites. The Petrochem Refinery Off-site Alternative is surrounded by similar, complex topography as the Mission Rock site. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that the related toxic air emissions for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts from toxic air emissions would be reduced to less than significant with implementation of the same or similar mitigation measures that are recommended for the proposed project.

Socioeconomics

Staff assumes that a similar construction workforce (numbers of construction workers) would be required for the Petrochem Refinery Off-site Alternative and that the construction timeline from site preparation to commercial operation would take approximately 23 months to complete, similar to Mission Rock. This alternative is within the Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area, which has a large labor supply that would meet this alternative's construction and operations workforce needs. This alternative would have a less-than-significant impact relating to population influx, **similar to Mission Rock**.

This alternative site is an industrial property, and construction of a project similar to Mission Rock at the site would not displace people or housing, or necessitate the need for replacement housing to be constructed elsewhere. Like Mission Rock, **no impact** would occur.

With the ample local workforce, there would be no substantial increases in demand for parks and recreation facilities, public libraries, law enforcement services, or schools. Thus, this alternative would have less-than-significant impacts on these services and facilities, **similar to Mission Rock**.

Expenditures for equipment and labor necessary to construct and operate this alternative would be similar to those for Mission Rock. The estimated fiscal benefits would have a beneficial impact, **similar to Mission Rock**.

There is an existing two-story office building and warehouses that are gutted and reportedly structurally sound at the Petrochem Refinery site that could be reused to accommodate the control building and garage/warehouse space that would be required for this alternative.

As school impact fees are imposed on new and reconstructed covered and enclosed commercial/industrial space, this alternative would require a condition of certification similar to **SOCIO-1**, which is recommended for Mission Rock, to ensure payment to the specific school district(s) in which the site is located and compliance with socioeconomics LORS.

Soil and Water Resources

The Petrochem Refinery Off-site Alternative and the proposed project are in the jurisdictional region of the Los Angeles Regional Water Quality Control Board

(LARWQCB), but the alternative site is in the Ventura River watershed. The Ventura River is located approximately 600 feet west of the site, and roughly 3½ miles upstream from the mouth of the river.

The alternative site would require construction of a 230-kV transmission line and a natural gas pipeline large enough to accommodate a 275-MW power plant. Connection to the electric grid would involve installation of towers and overhead lines from the site to the Santa Clara Substation. A SoCalGas high-pressure natural gas distribution pipeline roughly follows SR 33 near the eastern site boundary. This alternative could potentially connect to the distribution line via a 1,000- to 1,100-foot-long underground pipeline running north along Crooked Palm Road.

The site is located in an area that is serviced by the city of Ventura for potable water and the Ojai Valley Sanitary District (OVSD) for sewer service. The OVSD Wastewater Treatment Plant, located approximately three-quarter mile north of the site, treats wastewater to tertiary standards before it is discharged to the adjacent Ventura River. Although this potential source of recycled water is relatively close, the recycled water is not used by any party outside of OVSD due to a number of ongoing legal, environmental, and technical hurdles. Therefore, staff assumes the Petrochem Refinery Off-site Alternative would use potable water by tapping into Ventura's distribution mainline to supply all water uses.

Construction-related Impacts

Staff assumes that the entire 10-acre Petrochem Refinery Off-site Alternative site would at least require light grading for site preparation, and that prior to any soil disturbance, the U.S. Environmental Protection Agency will issue a "No Further Action" letter indicating clean-up of all prior site contamination to be complete. Excavations would occur during construction of the power block foundation, in addition to foundations for new buildings and pads for various ancillary facilities (water storage tanks, firewater pump, ammonia tanks, etc.). Trenching to install underground pipelines would take place on-site to connect to the underground linear facilities and extend off-site to connect to a supply of natural gas.

Compared to the Mission Rock site, construction activities at this alternative site would result in much less earthwork because Mission Rock would use approximately 120,000 cubic feet of imported fill material to elevate the entire site above the Santa Clara River floodplain.

Although this alternative site is near the Ventura River, staff assumes a power plant similar to Mission Rock could be constructed within the conceptual alternative site boundary shown in **Alternatives Figure 2**. Because the alternative site would not be located in the 100-year floodplain, the need to elevate the site is avoided (further discussed under, "Flooding Hazard," below). Construction activities at both sites would be subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permits, including California's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Impacts on water quality would be minimized through compliance with the Construction General Permit and other applicable NPDES permits. Required implementation of specific best

management practices (BMPs) for erosion control and wastewater management, in addition to numeric action levels (NALs) to evaluate the effectiveness of BMPs, would achieve minimum water quality standards. Although the amount of earthwork for Mission Rock would be considerable, compliance with the Construction General Permit would reduce potential impacts to less than significant. Similarly, construction activities at the alternative site would be subject to the Construction General Permit, which would reduce impacts to less than significant, **similar to Mission Rock**.

Storm Water Impacts

Development at the alternative site would not impact the course of a stream or river. Although a site-specific drainage study is needed to properly evaluate the adequacy of on-site drainage management, a storm water collection system similar to that proposed at the 10-acre Mission Rock site could likely manage storm water at the 10-acre alternative site. Both sites are subject to the same Ventura County water quality requirements for new development and redevelopment projects, including the engineering calculations and analysis in accordance with Ventura County's technical guidance manual. To satisfy these requirements, it must be demonstrated that the post-construction storm water controls will function appropriately. Implementation of these requirements at the alternative site would reduce potential storm water impacts to less than significant, **same as Mission Rock**.

Flooding Hazard

As shown in **Alternatives Figure 2**, the alternative site is located just outside the Federal Emergency Management Agency (FEMA) 1 percent annual chance flood hazard (also referred as the 100-year event floodplain). The FEMA flood hazard map shows the 0.2 percent annual chance flood hazard (also referred as the 500-year event floodplain) encroaching into portions of the site and covering a total area of roughly an acre. In comparison, proposed placement of infill material would elevate the Mission Rock site to remove it from the 100-year floodplain.

While this would reduce the flooding potential at the Mission Rock site, the properties surrounding the site would be within the 100-year floodplain. Because the alternative site is also surrounded by areas in the 100-year floodplain, the potential flooding hazard is **similar to Mission Rock**, and the impact conclusion for both is less than significant.

Wastewater Discharge Impacts

Because a feasible source of recycled water is not available at the alternative site, staff assumes that its water supply would be Ventura's potable water system. Although the alternative site would use the same technology as Mission Rock to generate the same amount of power, the quantity and quality of generated wastewater could be somewhat different due to the water quality differences between potable water and recycled water that would be used at Mission Rock.

For example, as water is evaporated in the chiller towers, minerals are left behind in the recirculating water. As evaporation continues, the water becomes more concentrated than the original water. To prevent this increasing concentration from forming scale, a certain amount of concentrated recirculating water bleed off (referred to as blow down)

is replaced with new supply water (referred to as make-up water). Generally speaking, the higher quality potable water can be recirculated longer before mineral concentrations become too high, which typically results in less overall water use compared to recycled water (see the discussion below under "Impacts on Water Supply"). Also, increased concentration of other impurities present in the recycled water could affect the quality of blow down water. This potential difference in the quantity and quality of generated wastewater could limit options for proper wastewater disposal.

The alternative site is serviced by the OVSD's wastewater system, which is expected to accept sanitary waste. Generated process wastewater could also be discharged to the municipal wastewater system, assuming the water quality criteria are met. OVSD has an Industrial Discharge Pretreatment Program that identifies specific discharge standards and requirements to reduce or eliminate toxic pollutants from discharges it would accept. An Industrial Wastewater Discharge Permit is issued to a specific industrial user for a specific operation and is based on the industrial user's typical discharge rate, peak flow rate, and wastewater constituents. Given the anticipated wastewater characteristics from a project similar to Mission Rock at the alternative site, it would be feasible to do any necessary pretreatment to comply with requirements for acceptance of the wastewater discharge at OVSD. Because the OVSD's wastewater treatment plant is licensed and regulated under waste discharge requirements issued by the LARWQCB, impacts would be reduced to less than significant, **similar to Mission Rock**.

Impacts on Water Quality

Potential impacts on water quality at the alternative site would be similar to those at

Mission Rock mainly due to its relative distance to a river. Potential impacts on groundwater would be less at the Petrochem Refinery site because an underground septic system presumably would not be needed.

Despite a lower potential to impact water quality, the alternative site would need to comply with the same requirements imposed on Mission Rock such as a hazardous materials management program, spill control and prevention, and other measures to avoid or reduce the potential discharge of contaminants. With these requirements implemented, impacts on water quality would be **similar to Mission Rock**.

Impacts on Water Supply

Although the use of higher quality potable water typically results in less overall water use compared to recycled water, the state's water policy prefers the use of recycled water for activities suitable for non-potable water use (e.g., evaporative cooling), because it conserves fresh water supplies for other beneficial uses. Because a feasible source of recycled water is not available at the Petrochem Refinery Off-site Alternative site, its use of potable water would not violate water policy. Assuming that its water supply would be the city's potable water system, this alternative could potentially impact the city's supply of potable water needed to service other water customers in the area.

To ensure that new development does not adversely affect the water supply or water supply reliability, the city of Ventura adopted the Water Rights Dedication and Water Resource Net Zero Policy Ordinance, which became effective in August 2016.

The ordinance requires subject projects to offset new or increased water demand through one or more compliance options, including dedication of water rights, extraordinary conservation measures, and/or payment of a fee. The fee proceeds are used to acquire additional water rights or develop water resources for new potable supplies for use by Ventura.

While Mission Rock would avoid use of potable water for industrial processes, the alternative site would essentially replenish its potable water use through compliance with the Water Rights Dedication and Water Resource Net Zero Policy Ordinance. With several options available to developers to offset new water demands, staff assumes that offsets would be achievable for the relatively small amount needed for the Petrochem Refinery Off-site Alternative (approximately 10 acre-feet per year[7]). For these reasons, staff concludes that this alternative would cause **no impacts** on regional potable water supply, which is the same conclusion as for Mission Rock.

Traffic and Transportation

Construction Workforce Traffic

SR 33 links Ojai and Ventura. The purpose of SR 33 is to provide interregional and recreational access. The lower segment of SR 33 is a freeway (two traffic lanes in each direction) between U.S. Route 101 (US 101) west of Ventura and Casitas Vista Road, which is almost 2 miles north of the alternative site.

[7] An estimated annual use of water is 67 acre-feet under the maximum scenario of 2,500 hours of operation, or 10 acre-feet under a more realistic operating profile of 500 hours per year.

According to the *Caltrans Transportation Concept Report* on SR 33, traffic on SR 33 near the Petrochem Refinery Off-site Alternative operates at an acceptable level of service (LOS), including during peak hours, and it is expected to continue operating at LOS “A” or “B” for the next few years (Caltrans 2005).

Due to the acceptable traffic LOS in the vicinity of the Petrochem Refinery Off-site Alternative and near the proposed project site, this off-site alternative’s temporary traffic impacts would be **similar to Mission Rock**. Temporary construction-related traffic impacts of this alternative would be potentially significant but could be reduced to less than significant by implementing a traffic control plan and obtaining applicable encroachment permits for heavy loads.

Driver Safety

Construction vehicles exiting the Petrochem Refinery Off-site Alternative would likely turn left onto Crooked Palm Road, then left onto N. Ventura Avenue, and right on Cañada Larga Road before merging onto SR 33. In this case, vehicles would make a potentially dangerous left turn at the unsignalized intersection of Crooked Palm Road and N. Ventura Avenue. Vehicles on N. Ventura Avenue do not stop at this ‘T’ intersection. Vehicles on Crooked Palm Road meet a stop sign before turning left or right and accelerating to the 45 mile-per-hour (mph) speed limit on N. Ventura Avenue. There is a potential driver safety risk when larger-sized construction vehicles attempt to merge into 45 mph traffic on N. Ventura Avenue from a stopped position.

The risk of a dangerous collision would be higher under the Petrochem Refinery Off-site Alternative compared to Mission Rock. Under the proposed project, many construction vehicles would exit the site via Mission Rock Road and continue on Pinkerton Road before turning left on South Briggs Road. Once on South Briggs Road construction vehicles need to either turn left onto the SR 126 eastbound ramp or right onto the SR 126 westbound ramp. These intersections are not signalized. However, the risk of a dangerous collision on South Briggs Road would be low due to the relatively low volume of traffic on this road. Therefore, driver safety impacts from the Petrochem Refinery Off-site Alternative would be **greater than Mission Rock**. The risk is considered potentially significant. Driver safety impacts from the Petrochem Refinery Off-site Alternative could be reduced to less than significant by requiring the preparation and implementation of a traffic control plan.

Damage to Roads and Bridges

Construction of the Petrochem Refinery Off-site Alternative would require truck trips that could damage roads. Impacts would be potentially significant but could be reduced to less than significant with preparation and implementation of a traffic control plan, including a requirement to repair and restore damaged roads. Because Mission Rock would require additional soil infill truck trips associated with raising the site above the flood zone, the proposed project’s greater truck traffic could cause greater wear and tear on roadways; therefore, under this off-site alternative, the potential for damage to roads from this off-site alternative would be **less than Mission Rock**.

Operations Traffic

The same number of operations workers (15 workers) and truck deliveries would be used for the Petrochem Refinery Off-site Alternative and the proposed project. The proposed project and the Petrochem Refinery Off-site Alternative would both add new project operations vehicle trips to the area.

However, the number of operations workers and deliveries would be relatively small and would not generate significant impacts on traffic LOS. Due to the small number of operations workers and deliveries, impacts would be **similar to Mission Rock** and less than significant.

Potential Impact of Thermal Plumes on Aircraft and Pilot Safety

Like the proposed project, the Petrochem Refinery Off-site Alternative would generate high-velocity thermal plumes which could potentially pose hazards to aircraft up to approximately 1,490 feet above ground level (AGL). The potential hazard assumes worst-case conditions, such as during full operation of the power plant in cool weather conditions with calm winds. The Oxnard Airport, the nearest airport, is approximately 10½ miles southeast of the Petrochem Refinery Off-site Alternative. It is unlikely that aircraft approaching or departing from Oxnard Airport would need to fly directly over the Petrochem Refinery Off-site Alternative site at low altitudes. The alternative site is located under flight route V-186 (AIRNAV 2017a). Aircraft navigating V-186 would likely be flying at an altitude of approximately 5,000 feet AGL. At this altitude, pilots would not encounter a high-velocity thermal plume from the Petrochem Refinery Off-site Alternative.

Pilots would be able to avoid low altitude direct overflight of the Petrochem Refinery Off-site Alternative site because it is not near any airport traffic pattern. While flight route V-186 does pass near the site, it is not likely the pilots on this route would encounter a high velocity thermal plume. Nonetheless, staff would likely recommend coordination with the Federal Aviation Administration (FAA) in issuing a Notice to Airmen (NOTAM) of the identified thermal plume source, as a very conservative precautionary measure. Aircraft and pilot safety impacts from this off-site alternative would be **less than Mission Rock**, and the impact conclusion is potentially significant.

Potential for Power Plant Structures to Impact Aircraft and Pilot Safety

Staff assessed the potential for aviation hazards with regard to: a) the height of the transmission structures, and b) distances and orientation of power plant structures with respect to identified runways. According to Title 14 of the Code of Federal Regulations, Section 77.9(b)(1) for construction or alterations within 20,000 feet (3.8 miles) of an airport with a runway more than 3,200 feet in length, and Section 77.9(b)(2) for construction or alterations within 10,000 feet of an airport with a runway no more than 3,200 feet in length, the FAA shall be notified if the height of the construction or alteration exceeds an imaginary surface extending outward and upward at a slope of 100 to 1 or 50 to 1 respectively from the nearest point of the nearest runway of the airport.

Staff also utilizes the FAA's Notice of Criteria Tool used to determine whether a structure or project would trigger FAA review based on a number of factors based on a structure's geographical location, elevation, height above ground level and relative location to aviation facilities or navigational aids.

Based on the applicant's results using this FAA tool for the Mission Rock site, the proposed project includes structures which are "in proximity to a navigation facility and may impact the assurance of navigation signal reception."

The FAA has requested the applicant submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, for Mission Rock's five combustion turbine generator exhaust stacks and electric transmission system, consisting of 36 monopoles ranging from 80 to 200 feet tall. The analysis of potential impacts of these structures on navigation signals will require an FAA hazard determination. As of publication of this staff assessment, staff has not received a completed FAA hazard determination for Form 7460-1 for the proposed project. The potential impacts of Mission Rock on navigation signal reception is **indeterminate**, pending a completed FAA review.

The Mission Rock site is close to 3½ miles southwest of the Santa Paula Airport (from the end of the nearest runway). The Petrochem Refinery Off-site Alternative is approximately 10½ miles northwest of the Oxnard Airport and 14 miles northwest of the Camarillo Airport. Construction of a project like Mission Rock at the alternative site would include five, 60-foot-tall exhaust stacks. These stacks would not exceed the imaginary surface, detailed in Title 14 of the Code of Federal Regulations, Section 77.9. According to the FAA Notice of Criteria Tool, the exhaust stacks at this alternative site would require the submittal of Form 7460-1, due to their proximity to aviation navigational aids. The exhaust stacks would have the potential to interfere with air traffic navigational signals. The potential impacts on navigation signals for both the Petrochem Refinery Off-site Alternative and the Mission Rock site relating to the exhaust stacks are unknown without determinations from the FAA. Given the distances of this alternative site to the nearest airports, staff estimates that there would not be a greater potential for an impact to occur at this site compared to Mission Rock, and the impact would be **less than or similar to Mission Rock**. Without an FAA review, the comparative impact conclusion is indeterminate.

The transmission system design for Mission Rock and the conceptual route for this off-site alternative could indicate similar potential impacts. Both transmission systems would traverse the same elevated topography on route to a connection point at the Santa Clara Substation. According to the FAA Notice of Criteria Tool, the transmission systems of the proposed Mission Rock project and conceptual route for this off-site alternative would require submittal of Form 7460-1, due to their potential to interfere with aviation navigational aid reception. Similar to the proposed Mission Rock project, the conceptual transmission design for the Petrochem Refinery Off-site Alternative would not exceed the imaginary surface, detailed in Title 14 of the Code of Federal Regulations, Section 77.9 for any nearby airport. For this reason, staff concludes that potential impacts of the conceptual transmission system for this off-site alternative in regards to navigation signals and aircraft traffic would be **less than or similar to Mission Rock**.

Despite the full impact analysis of the transmission system under the proposed Mission Rock project being contingent on an FAA determination, staff estimates that there will not be a greater potential for impact under the Petrochem Refinery Off-site Alternative. Without an FAA review, and without information indicating whether mitigation measures would be required for potential impacts, the comparative impact conclusion is indeterminate.

Aircraft piloted to arrive and depart from the Oxnard Airport are not known to fly over the Petrochem Refinery Off-site Alternative at low altitudes, and the minimum altitude for flight route V-186 is well above the exhaust stack height. Staff concludes that, **similar to Mission Rock**, the exhaust stacks would not create a significant physical obstruction to arrival/departure tracks at the Mission Rock site or this alternative site, and the impact conclusion for both sites is less than significant.

Visual Resources

This subsection discusses the visual setting and estimates viewer concern for viewer groups in the area where the Petrochem Refinery Off-site Alternative is located. Comparative visual impacts of this alternative to Mission Rock follow the setting discussion.

Visual Setting, Viewer Concern, and Viewer Exposure

Despite the historical industrial uses and the remnant structures on the site from those uses, the visual character of the area near the Petrochem Refinery property as seen from SR 33 is dominated by visually intact, natural wooded slopes along the narrow Ventura River canyon leading north to Ojai. Views from the elevated highway in the immediate vicinity of the adjacent residential community are relatively well-screened by substantial mature tree plantings lining the highway. The presence of roadside tree screening also applies to most of the Petrochem Refinery property frontage along Crooked Palm Road.

Visual quality of the site setting is *moderately high*. Visual quality from within the adjacent communities is *moderate*, and typical of suburban residential developments. The visual quality of views from the Ojai/Ventura Bike Path is highly variable as it traverses visually intact natural areas and nearby industrial areas such as the alternative site and the oil fields to the south.

Viewer concern of motorists on SR 33 is considered *moderately high* due to its eligibility for state scenic highway status. Viewer concern of residents in adjoining communities is considered *high*. Viewer concern of recreationists on the bike path is considered *moderately high*. Although the focus of such viewers is toward scenic values, exposure to the industrial sites through the canyon is transient, and the number of viewers is estimated to be much lower than the number of highway viewers.

Viewer exposure to the site for motorists near the site is *moderately low*. By far the most numerous viewer group is considered motorists on SR 33. From southbound SR 33 much of the roadway frontage near the east side of the site is visually well-screened by a tall, dense roadside tree canopy. **Alternatives Figure 6** provides a view toward the site from southbound SR 33.

Although some of the closest residences on the east side of the highway are within approximately 600–1,000 feet of the site, the elevated highway partially or entirely blocks views toward the site from these areas. Where sightlines to the site from residences exist, viewer exposure is generally blocked by the roadside tree screening. Views from adjacent segments of N.

Ventura Avenue and Crooked Palm Road have close views of the site. In some areas these views are screened by the existing tree canopy; in other segments, a viewer glancing toward the site can see portions of the industrial type structures remaining on the site. Views toward the site from northbound SR 33 are somewhat more exposed, as shown by **Alternatives Figure 7**, which includes views of the large warehouse that remains on the southern portion of the property and the spherical storage tanks on the west side of the property.

Bicyclists using the bike path adjacent to the west side of the site have immediate foreground views into the site, and thus have *high viewer exposure* for the duration of this segment of the path. The two spherical storage tanks on the west side of the site are prominently visible from the bike path; the storage tanks are unique visual elements in these views. On February 13, 2017, the Ventura County Cultural Heritage Board recommended to the Ventura County Planning Division on a 5-0 vote that several elements at the site, including the spherical tanks, are eligible for listing on the local register as individual historical landmarks. (Potential impacts on historical resources under this alternative are discussed under the “Cultural Resources” subsection, above.) For views toward the site from SR 33 and N. Ventura Avenue, portions of the spheres are visible from some viewpoints and otherwise obscured from view due to dense tree growth on the east side of the site. The spheres are not prominently visible structures from areas east of the site.

This alternative would require an approximately 8-mile-long transmission line from the alternative site to the Santa Clara Substation (**Alternatives Figure 4**). This analysis assumes that the alignment would parallel existing Southern California Edison (SCE) transmission lines. Unlike the proposed Mission Rock transmission line, the potential alignment for this alternative would pass through isolated, unoccupied open space lands with very few potential viewers and no formal recreational uses in the viewshed. Viewer concern, exposure, and overall visual sensitivity of this alignment is thus *low*.

Visual Impacts

The Petrochem Refinery Off-site Alternative would introduce power plant structures at the site that would be visible from some viewpoints in the surrounding area. The most prominent visual elements would include five, 60-foot-tall exhaust stacks; 48- and 54-foot-tall water storage tanks (two storage tanks); and three, 65-foot-tall transformer dead end structures. Other potentially visible features would include transmission line structures that would exit the site to the east and cross SR 33 and N. Ventura Avenue to parallel the existing 66-kV transmission line that continues east across an agricultural field and a ridge above Manuel Canyon. Given the existing screening provided by the mature trees in the area next to and near the site, staff estimates that a power plant similar to Mission Rock would be visible, but not visually dominant in the viewshed.

Staff identifies no designated scenic vistas near the Petrochem Refinery Off-site Alternative (or in the vicinity of the proposed project). This portion of SR 33 is not identified as a scenic resource overlay zone in the Ventura County General Plan. Therefore, no change would occur relating to this visual resource impact criterion, and **no impact** is identified.

SR 33 in the vicinity of the alternative site is recognized as eligible for designation as a state scenic highway, but it has not been so designated (Ventura County Planning Division 1990). A relatively long segment of SR 33 starting approximately 6½ miles north of Ojai, near Matilija Reservoir (several miles north of this off-site alternative), and continuing north to the Santa Barbara county line is designated scenic under the California Scenic Highway Mapping System. The Petrochem Refinery property is not near the state-designated scenic highway segment. The Petrochem Refinery Off-site Alternative has the potential to adversely impact this segment of the eligible scenic highway corridor. However, with implementation of mitigation measures, these effects could feasibly be reduced to a less-than-significant level that would be consistent with a future scenic highway designation. Mitigation measures would include supplementing perimeter tree screening at the site, treating project structure surfaces to reduce visual contrast with the landscape, and implementing paint color scheme to help blend project structures with the environment.

Potential impacts on the visual character and quality of the site and its surroundings during project operations would be reduced in the long term with appropriate site perimeter landscape screening mitigation measures. As seen by motorists on SR 33 and other nearby roadways, visual impacts of this alternative could be reduced to less than significant with implementation of mitigation measures similar to those recommended for Mission Rock. This is due not only to the extensive existing perimeter tree screening at the site, but also to the heights of the project features, which, like Mission Rock, would not exceed the heights of the exhaust stacks or transformer dead end structures. The exhaust stacks would be partially screened by the tall existing tree canopy and possibly by supplemental tree plantings to fill in areas on the site perimeter.

Without photographic simulations, staff cannot precisely determine the visibility of the tallest structures from the highway, other roads, and nearby residences. However, with implementation of available and feasible visual resource mitigation measures, staff concludes that the site could be substantially screened and that potential visual impacts on motorists, residents, and recreationists would be reduced to less-than-significant levels.

The Petrochem Refinery Off-site Alternative would be set back from the bike path (**Alternatives Figure 3**) so that views toward the alternative site could be screened by an opaque fence, decorative wall, and landscape plantings. Staff considers the spherical storage tanks on the west side of the Petrochem Refinery property to be a scenic resource or landmark. These structures are not inside the conceptual site boundary for this alternative, and staff assumes that the two spherical storage tanks would remain on the Petrochem Refinery property. Staff assumes that views of these unique structures from the Ojai/Ventura Bike Path would not change under this alternative.

Nighttime light and glare impacts could occur during construction and operation of this alternative. However, due to the relatively low height of power plant structures and the screening provided by mature trees in the site vicinity, mitigation measures similar to those recommended for Mission Rock would reduce potential impacts at this site to less than significant.

Comparative Impact Conclusions

Due to the eligibility of the lower segment of SR 33 to be a state-designated scenic highway, staff concludes that this alternative could adversely affect a state-eligible scenic highway. However, should the lower highway segment be nominated for scenic highway designation in the future, staff concludes that a project similar to Mission Rock at the alternative site could be designed to protect the scenic corridor and avoid damaging scenic resources in the highway viewshed.

Mission Rock's impacts on visual resources would be reduced to less than significant with implementation of conditions of certification. However, Mission Rock's major visual effect would be caused by portions of the 6.6 miles of transmission line that would impact high-sensitivity visual and historical resources in that viewshed (i.e., the Santa Clara Valley Rural Historic District (SCVRHD) described in the **Cultural Resources** section of this staff assessment). Even with conditions of certification imposed to reduce visual impacts, the Mission Rock transmission line would remain highly visible in proximity to numerous visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse effects. (See the **Visual Resources** section of this staff assessment for a description of scenic resources associated with the SCVRHD.) These residual effects would not occur under the Petrochem Refinery Off-site Alternative. There are no comparable scenic and historical resources or sensitivities in this alternative's viewshed. Therefore, overall impacts on scenic resources under this alternative would be considerably **less than Mission Rock**.

Impacts of this alternative's transmission line would generally be less than significant due to its physical isolation and the absence of sensitive viewers. For the area where a few transmission structures would be installed near the alternative site, a mitigation measure to reduce visual contrast of the structures with the landscape would reduce the potential impact to less than significant. Compared to this alternative, viewer concern in the Mission Rock viewshed where the transmission line would be installed is considered *high* due to the presence of the SCVRHD. Because of the significant visual impact of the proposed project due to the transmission line, staff concludes that the potential for this alternative to substantially degrade the existing visual character or quality of the site and its surroundings is **less than Mission Rock**, and the impact conclusion is potentially significant. Nonetheless, visual impacts of the proposed project and this alternative on visual character and quality could be reduced to less than significant with implementation of available mitigation measures to reduce visual contrast of project structures with the environment, including color treatment of power plant structures and supplemental landscape screening of the site.

Staff concludes that the potential for this alternative to create a new source of substantial light or glare during the daytime or nighttime would be **similar to Mission Rock**, and the impact conclusion is potentially significant. Mitigation measures to minimize nighttime light pollution and ensure that light sources are not visible from areas beyond the site and to avoid reflected glare would reduce potential impacts to less than significant.

Waste Management

Waste management LORS are applied at the local and statewide levels to ensure safe handling and disposal of solid and hazardous waste from any facility.

Staff considers waste generation and the potential for contamination in assessing the environmental suitability of a project as proposed and at alternative sites. The waste impacts of concern are those occurring on-site and at disposal facilities and would be related to clearance, construction, and operational activities. The Petrochem Refinery Off-site Alternative is in an area near active oil fields and thus has a continuing history of oil extraction and related waste management activities.

Remediation of contaminants was recently conducted at this alternative site. Energy Commission staff would require compliance with the same waste management LORS and would recommend mitigation measures addressing site clearance, construction, and operations. Mitigation measures would include preparation, submittal, and implementation of a *Soil Management Plan*. Given the already-identified contamination at the Petrochem Refinery property, the potential for environmental health impacts could be **greater than Mission Rock**. Mitigation measures would be recommended to reduce potentially significant impacts to less-than-significant levels.

If demolition of structures occurred, that activity would increase on-site waste generation; however, more than 75 percent of the demolition waste would be recycled as required by Assembly Bill 341. The applicant would be required to comply with waste mitigation measures and applicable LORS to reduce impacts on available disposal facilities while minimizing the impacts on human health, **similar to Mission Rock**.

Worker Safety and Fire Protection

The Petrochem Refinery Off-site Alternative would have the same worker safety and fire protection requirements as the proposed project. This alternative assumes construction and operation of a power plant that is the same as Mission Rock, although the site arrangement would be somewhat different. This off-site alternative would cause potentially significant impacts that are **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potentially significant impacts to less than significant.

In conversations with the Ventura County Fire Department (VCFD), staff was informed that the VCFD is capable of responding to all emergency service needs (fire, rescue, hazardous materials spill, and medical) throughout the county in a timely manner and no additional mitigation measures would be needed for a new power plant project in the county. Because the VCFD has dispatch authority linked to all fire departments in the county, and not just within its own jurisdiction and its own response teams, drawdown of resources would be extremely rare. Therefore, staff concludes that like the proposed project, **no impacts** would occur relating to emergency response time or risk of significant drawdown of emergency medical services.

DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to Mission Rock on an approximately 12½-acre site in an industrial area in the eastern portion of Oxnard. The site address is 390 S. Del Norte Boulevard near the intersection with E. Fifth Street (SR 34) (**Alternatives Figure 8**). Both roadways are major travel corridors (City of Oxnard 2006). The Union Pacific Railroad freight line parallels E. Fifth Street along the southern boundary of the site with an at-grade signalized crossing at S. Del Norte Boulevard. This rail line also provides Amtrak and Metrolink passenger service. The site is located approximately 7 miles east of the coastline and 5 miles inland from the Coastal Zone boundary. This off-site alternative is located approximately 1½ miles southwest of Camarillo Airport. Staff is analyzing this off-site alternative under the Energy Commission proceeding for the Puente Power Project (docket number 15-AFC-01).

The approximately 12½-acre site being evaluated under this alternative is located on the south half of an approximately 25-acre parcel with Assessor Parcel Number (APN) 2160160295. A cement batch plant and industrial storage yard are located on the south half of the parcel. The north half of the parcel is in agricultural use and is not being evaluated as part of this alternative. The property west of the site includes vacant land and a regional recycling facility (**Alternatives Figure 9**).

The vacant property may be developed as a biowaste-to-energy conversion center for organic material. An oil refinery is located on the property south of the site across SR 34. Areas east and north of the site include industrial, agricultural, and warehouse commercial uses. The property line along the site's east side coincides with the city boundary.

A single-family residence is located on Sturgis Road approximately one-quarter mile northeast of the approximate center point of the site. The closest residential neighborhood is located approximately 1¼ miles west/northwest of the site.

A 30- to 36-inch diameter natural gas pipeline parallels Rice Avenue approximately 1 mile west of the site (**Alternatives Figure 8**). To avoid encroaching on the Union Pacific Railroad property easements in the area, staff has identified a potential natural gas pipeline route that could parallel S. Del Norte Boulevard north for close to a mile and then west for more than three-quarter mile to Rice Avenue. To avoid the Union Pacific Railroad easement (width unknown), the east to west portion of this pipeline alignment could potentially be constructed near a fence line north of the railroad tracks and south of the irrigation ditch bordering the agricultural area to the north. Assuming an easement or ROW could be obtained for this natural gas pipeline alignment, staff considers this linear connection to a natural gas supply to be potentially feasible. This off-site alternative is not within a reasonable distance of Oxnard's existing recycled water distribution system. Oxnard's water distribution system shows a potable water pipeline paralleling Sturgis Road approximately 970 feet north of the site's north boundary (**Alternatives Figure 9**). Connecting this off-site alternative to the potable water system could be accomplished assuming the necessary ROW along S. Del Norte Boulevard is available or could be obtained for pipeline installation. Similar to Mission Rock, this off-site alternative would include on-site storage of water for power plant process uses.

Oxnard's eastern trunk sewer line parallels S. Del Norte Boulevard along the west side of the site (**Alternatives Figure 9**). It is assumed that it would be possible to connect this off-site alternative to the sewer service.

This alternative would require constructing an on-site power plant switchyard. Connecting this alternative to the electrical grid would require installing transmission structures and a new, single-circuit, three-phase, 230-kV generator tie-line to extend south from the site to the Ormond Beach Substation next to the Ormond Beach Generating Station (OBGS). Power would be distributed from the Ormond Beach Substation to the SCE transmission system. Based on the Mission Rock project description (and with similar assumptions for this alternative), the 230-kV generator tie-line would be supported by steel structures ranging from approximately 80–156 feet tall.

A conceptual route for the generator tie-line could extend east along E. Fifth Street, south along Wood Road, west along E. Hueneme Road, and south along Edison Drive to connect at the Ormond Beach Substation (**Alternatives Figure 8**). This off-site transmission line route is estimated to be a total of 10 miles long.

Although this is not the shortest or most direct route to the substation, it follows existing roadways and avoids residential areas. Land uses in the area along the possible transmission line route are primarily rural and agricultural, and this potential alignment, although adjacent to roadway infrastructure, could involve converting some agricultural acreage to a utility corridor.

Land Use Planning

To determine potential consistency of the Del Norte/Fifth Street Off-site Alternative with land use LORS, staff reviewed the *City of Oxnard 2030 General Plan Goals & Policies* (general plan), the *City of Oxnard 2030 General Plan Map*, the city's zoning ordinance, and the *Airport Comprehensive Land Use Plan for Ventura County* (Ventura County ACLUP). The site is designated by the general plan as Industrial Heavy (IH), which allows industrial uses that are primarily outdoor and/or within specialized structures that may involve transportation, storage, or use of hazardous materials. Public services are permitted under the IH land use designation (City of Oxnard 2011, 2014).

The zoning district for this alternative site is Light Manufacturing Planned Development (M1-PD). The M1 zone allows manufacturing, processing, fabrication, public and private service uses, and other similar uses the city of Oxnard (city) finds to be consistent with the purpose and intent of this zone. Public service uses permitted in the M1 zone include electrical transmission and distribution substations and public utility service yards with incidental buildings. The M1 zone has a building and structure height limit of 55 feet. The five exhaust stacks and three transformer dead-end structures of a project similar to Mission Rock at this alternative site would exceed the height limit. The PD Additive Zone is intended to ensure the orderly development of land in conformance with the general plan and to permit departures from the restrictions imposed within the basic zones (Sections 16-220, -221, -231, and -270 of the zoning ordinance). A power plant similar to Mission Rock would not be consistent with the M1 zoning district.

This alternative site is within the Ventura County ACLUP, and specifically in the Camarillo Airport Land Use Study Area. Based on Figure 6A in the ACLUP, this alternative site is not within the noise contours, runway protection zone, safety zone, height restriction zone, traffic pattern zone, or extended traffic pattern zone of the Camarillo Airport (Ventura County Airport Land Use Commission 2000). See the subsection below, "Traffic and Transportation," for an analysis of potential impacts of this alternative on aircraft and pilot safety.

Under the Energy Commission's in lieu permitting authority, Energy Commission staff would have to determine that the proposed use would conform with the general plan and other adopted standards. Development of a project similar to Mission Rock at this alternative site would require a zoning amendment to change the zoning district to Heavy Manufacturing (M2) (with or without the additive PD zone), which would be consistent with the IH land use designation (City of Oxnard 2011).

The zoning ordinance specifies that no new development of structures or outdoor uses is permitted in the M1 or M2 zones without a special use permit from the city. Special use permits are granted based on conditions and limitations deemed necessary to preserve the integrity and character of the zoning district, the utility and value of adjacent property, and the general welfare of the neighborhood and the public (Sections 16-223, -246 and -530 of the zoning ordinance).

Although the Energy Commission would have in lieu permitting authority for an electric generating facility at the Del Norte/Fifth Street Off-site Alternative, Section 25506 of the Warren-Alquist Act requires the Energy Commission to request comments and recommendations from appropriate government agencies (e.g., a local municipality) regarding the design, operation, and location of the facilities in relation to environmental quality, public health and safety, and other factors on which an agency may have expertise.

With a zoning amendment to change the site zoning to Heavy Manufacturing (M2), the Del Norte/Fifth Street Off-site Alternative could potentially be designed to be consistent with applicable land use LORS.

Potential to Attain the Project Objectives

The basic project objectives address developing a 275-MW natural gas-fired power plant to provide dispatchable, flexible, and efficient energy generation and a 25-MW battery energy storage system at the Mission Rock site. The primary objective or underlying purpose of Mission Rock is to meet the local capacity requirement (LCR) need in the Moorpark sub-area of the Big Creek/Ventura local reliability area by 2021. An alternative site in the Moorpark sub-area could, in theory, provide a location to develop a project similar to Mission Rock. However, existing uses at the Del Norte/Fifth Street Off-site Alternative site includes a cement batch plant, and it is uncertain whether the applicant could obtain site control and complete environmental review and licensing to have a project built and commissioned at the site to meet LCR needs by 2021.

The last two objectives address siting the project as near as possible to an SCE substation with available transmission capacity to serve the Moorpark sub-area and reusing a brownfield site in an industrial area. The suggested transmission line alignment follows existing linear features (primarily roadways) and purposely avoids encroaching on residential and other developed land uses in the region. It is unknown whether a more direct alternative route for a transmission line exists that could also avoid residential or other possibly sensitive land uses. For purposes of this analysis, the suggested 10-mile-long transmission connection route is not so far away as to be considered infeasible.

If construction and operation of the Del Norte/Fifth Street Off-site Alternative was feasible, this alternative could potentially satisfy all of the project objectives.

Potential Feasibility Issues

The applicant does not have control of the Del Norte/Fifth Street Off-site Alternative site. Developing a project similar to Mission Rock at this site would require the applicant to negotiate a property purchase or lease agreement with the owner, assuming the owner is willing to consider discontinuing existing uses or lease agreements and selling the property. Depending on the outcome of a potential negotiation, project viability could be affected.

Another factor affecting feasibility of an alternative addresses availability of infrastructure. Constructing and operating a project similar to Mission Rock at the Del Norte/Fifth Street Off-site Alternative site would require a new power plant design proposal for the site with plans and analyses for off-site utility connections.

The State Water Resources Control Board's Statewide Water Quality Control Policy (i.e., the once-through cooled, or OTC Policy) will cause the potential retirement of several of the state's OTC power plants at the end of 2020, including the natural gas-fired turbine units at the OBGS. With the possible retirement of 1,500 MWs of generating capacity at the OBGS, connecting this off-site alternative to an existing 220-kV breaker position at the Ormond Beach Substation could allow the Del Norte/Fifth Street Off-site Alternative to interconnect with the grid at the substation without causing downstream impacts on the transmission grid. However, the project proponent for a project at this site would have to apply to the California ISO interconnection process, and a system impact study would be required to assess potential effects on the grid.

Additional planning and analysis would be required to obtain access for construction along a possible 10-mile-long linear route for the new transmission line. The work to gain site control of the Del Norte/Fifth Street Off-site Alternative and apply to the California ISO's interconnection process would delay the project and could affect its viability as an alternative.

Environmental Analysis

Alternatives Table 3 presents a summary comparison of impacts of Mission Rock to the same or similar potential impacts of the Del Norte/Fifth Street Off-site Alternative. Comparative discussions for each environmental topic area follow the table.

Alternatives Table 3
Summary Comparison of Impacts of Mission Rock to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Mission Rock	Del Norte/Fifth Street Off-site Alternative
Agriculture, Forestry Resources, and Land Use		
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (maps prepared pursuant to the Farmland Mapping and Monitoring Program) to non-agricultural use	LS	Similar to Mission Rock (LS)
Conflict with existing zoning for agricultural use, or a Williamson Act contract	LS	Similar to Mission Rock (LS)
Conflict with existing zoning or cause rezoning of forest land, timberland, or timberland that is zoned Timberland Production	—	—
Cause loss or conversion of forest land to non-forest use	—	—
Cause a change in the environment that could result in conversion of Farmland to non-agricultural use or forest land to non-forest use	LS	Similar to Mission Rock (LS)
Physically divide an established community	—	—
Conflict with any applicable habitat conservation plan or natural community conservation plan	—	—
Conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	LS	Greater than Mission Rock (LS)
Air Quality		
Criteria Pollutants		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Similar to Mission Rock (SM)
Greenhouse Gas		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Similar to Mission Rock (SM)
Biological Resources		
Project construction impacts		
Impacts on riparian habitat (state waters)	SM	No impact (—) or similar to Mission Rock (PSM)
Impacts on special-status plants and wildlife (excluding nesting birds) on the site	—	No impact (—) or greater than Mission Rock (LS)
Impacts on special-status plants and wildlife (excluding nesting birds) along the transmission line	—	No impact (—) or greater than Mission Rock (LS)
Impacts of noise on nesting birds (non-listed species)	SM	Similar to Mission Rock (PSM)
Impacts of noise on nesting birds (listed species)	SM	—
Impacts of lighting, storm water, and invasive weeds on biological resources	SM	Less than Mission Rock (PSM)
Project operations impacts		
Impacts of noise on nesting birds (non-listed and listed species)	LS	Similar to Mission Rock (LS)

Alternatives Table 3
Summary Comparison of Impacts of Mission Rock to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Mission Rock	Del Norte/Fifth Street Off-site Alternative
Impacts of nitrogen deposition on biological resources	—	—
Impacts of transmission line electrocution on avian species (large raptors)	SM	Similar to Mission Rock (PSM)
Impacts of transmission lines/poles relating to the risk of collision for listed avian species	SM	Greater than Mission Rock (PSM)
Cultural Resources		
Impacts on surficial archaeological and ethnographic resources	—	Greater than Mission Rock (PSM)
Impacts on buried archaeological resources	PSM	Similar to Mission Rock (PSM)
Impacts on built environment resources	SM	Less than Mission Rock (PSM)
Geology and Paleontology		
Risk of damage to paleontological resources	PSM	Similar to Mission Rock (PSM)
Potential impacts on geological or mineralogical resources	—	—
Risk of surface fault rupture	LS	Similar to Mission Rock (LS)
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Similar to Mission Rock (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	LS	Similar to Mission Rock (LS)
Hazardous Materials Management		
Potential for impacts on people from an on-site release	PSM	Similar to Mission Rock (PSM)
Risk of accidental release of hazardous materials during transport	PSM	Similar to Mission Rock (PSM)
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	Similar to Mission Rock (PSM)
Public Health		
Potential for on-site impacts on human health and the environment relating to toxic emissions	PSM	Similar to Mission Rock (PSM)
Potential for project area impacts from emissions of toxic air pollutants	PSM	Similar to Mission Rock (PSM)
Potential for impacts on human health and the environment relating to existing health status	PSM	Similar to Mission Rock (PSM)
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	Similar to Mission Rock (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	—	—
Adversely impact acceptable levels of service for law enforcement, parks and recreation, and schools	LS	Similar to Mission Rock (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees	B	Similar to Mission Rock (B)

Alternatives Table 3
Summary Comparison of Impacts of Mission Rock to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Mission Rock	Del Norte/Fifth Street Off-site Alternative
Soil and Water Resources		
Construction-related impacts	PSM	Similar to Mission Rock (PSM)
Storm water impacts	PSM	Same as Mission Rock (PSM)
Flooding hazard	LS	—
Wastewater discharge impacts	SM	Similar to Mission Rock (SM)
Impacts on water quality	PSM	Similar to Mission Rock (PSM)
Impacts on water supply	—	—
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Similar to Mission Rock (PSM)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Similar to Mission Rock (PSM)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than Mission Rock (PSM)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Similar to Mission Rock (LS)
Impacts on aircraft and pilot safety from thermal plumes	PSM	Greater than Mission Rock (PSU)
Impacts on navigation signals and aircraft traffic relating to location of exhaust stacks	Indeterminate	Greater than Mission Rock (Indeterminate)
Impacts on navigation signals and aircraft traffic relating to location of transmission lines	Indeterminate	Greater than Mission Rock (Indeterminate)
Potential for exhaust stacks to physically obstruct aircraft arrival/departure tracks	LS	Similar to Mission Rock (LS)
Visual Resources		
Substantial adverse effect on a scenic vista	—	—
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	SM	—
Substantially degrade the existing visual character or quality of the site and its surroundings	SM	Less than Mission Rock (PSM)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Similar to Mission Rock (PSM)
Waste Management		
Potential for on-site impacts on human health and the environment relating to potential waste discharges	PSM	Similar to Mission Rock (PSM)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	PSM	Similar to Mission Rock (PSM)
Potential for impacts on human health and the environment relating to past or present soil or water contamination	PSM	Similar to Mission Rock (PSM)
Worker Safety and Fire Protection		
Risks/hazards to on-site workers	PSM	Similar to Mission Rock (PSM)

Alternatives Table 3
Summary Comparison of Impacts of Mission Rock to the Del Norte/Fifth Street Off-site Alternative

Environmental Effect	Mission Rock	Del Norte/Fifth Street Off-site Alternative
Emergency response time	—	—
Risk of significant drawdown of emergency medical services	—	—

Agriculture, Forestry Resources, and Land Use

The transmission line and structure foundations for the Del Norte/Fifth Street Off-site Alternative would cross farmland designated by the Farmland Mapping and Monitoring Program as Farmland of Statewide Importance and to a lesser extent, Prime, with smaller portions of Unique designated land. Like Mission Rock, this alternative's transmission line would cross land subject to a Williamson Act contract, which is a compatible use with any agricultural preserve. Ventura County provides threshold criteria and standard methodologies for determining whether a project could have a significant effect on the environment. Based on significance thresholds for loss of Important Farmland (Prime/Statewide, Unique, or Local), this alternative would have a less-than-significant impact on farmland (Ventura County Planning Division 2011). For this alternative, a similar amount of Important Farmland would be impacted as would occur under Mission Rock; therefore, this impact is considered **similar to Mission Rock**.

This off-site alternative would not cause the loss of forest land, and no impact would occur, which is the same conclusion as for Mission Rock. No land affected by the proposed project or this alternative is zoned as forest land or Timberland Production, and **no impact** would occur.

The transmission line would parallel existing roads, highways, and utility corridors, and the Del Norte/Fifth Street Off-site Alternative site is in an industrial area; therefore, construction of this alternative would not physically divide an existing community. This alternative would have **no impact** relating to this significance threshold, which is the same conclusion as for Mission Rock.

The alternative site and linears are not located in an area covered by a habitat conservation plan or natural community conservation plan. This alternative would have **no impact** on a habitat conservation plan or natural community conservation plan, which is the same conclusion as for Mission Rock.

As discussed above, with a zoning amendment to rezone the site, the Del Norte/Fifth Street Off-site Alternative could potentially be constructed and operated to be consistent with applicable land use LORS. Staff assumes that mitigation measures could reduce significant environmental impacts to less-than-significant levels.

Therefore, with implementation of project and site design features, and mitigation measures imposed to reduce impacts to less than significant, staff concludes that conflicts with land use LORS could be resolved. However, the probable requirement for a zoning amendment to allow development of a project similar to Mission Rock on the alternative site, and the resultant intensification of allowable land uses based on current zoning, leads staff to conclude that the impact is **greater than Mission Rock**. Like Mission Rock, the impact conclusion is less than significant.

Air Quality

The Del Norte/Fifth Street Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative are located within the jurisdiction of the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality (attainment status of criteria pollutants) is the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

Under the Del Norte/Fifth Street Off-site Alternative, approximately 275 MWs of natural gas-fired generation would be constructed and operated at the alternative site. It is expected that construction related air quality and greenhouse gas impacts for the Del Norte/Fifth Street Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, and numbers and types of equipment used would be similar for the construction at both sites. The Del Norte/Fifth Street Off-site Alternative is located in less complex terrain compared to the Mission Rock site, which could result in lower operating impacts, but staff does not expect there to be significant differences between the two sites. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of similar mitigation measures that would be recommended under the proposed project.

Biological Resources

Staff analyzed the Del Norte/Fifth Street Off-site Alternative using available data sets, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), results of literature reviews, and aerial photographs.

A single on-site drainage ditch along the southern edge of the site is mapped as a riverine wetland by the National Wetland Inventory; however, this drainage ditch appears to be filled. Google Earth imagery from June 2017 shows that the site contains another natural bottom drainage ditch inside the northern third of the site, perpendicular to S. Del Norte Boulevard. The site is primarily developed for an industrial use; it is surrounded by vacant land and other industrial uses. Areas south and east of the site include agricultural uses. Habitat on the site is degraded, and the general character of the area is either developed or in use for agricultural production.

The Del Norte/Fifth Street Off-site Alternative would require an approximately 10-mile-long transmission line. It would also require a new natural gas pipeline to an interconnection point close to 2 miles northwest of the site. Biological surveys have not been performed along potential linear routes or at the alternative site. However, biological constraints appear low at the alternative site according to a December 2015 analysis of alternatives provided by the applicant in the Puente Power Project energy facility siting case (NRG 2015).

Project Construction Impacts

The site appears to have long been disturbed and/or used for industrial purposes; on-site vegetation consists primarily of ruderal and/or ornamental species. The natural bottom drainage ditch across part of the north half of the site is approximately 250 feet long and could have been associated in the past with agricultural operations to the north and east. This feature may be considered a water of the state. The drainage ditch may contain native riparian plant species that could be impacted and would require a floristic survey to determine whether riparian plant species are associated with the drainage.

The Del Norte/Fifth Street Off-site Alternative covers approximately 12½ acres. It is unknown whether a site plan could be devised that would avoid impacting the on-site drainage ditch. Because a site configuration for this alternative is not known, it is not possible to conclude whether a project at this site could be designed to avoid the potential waters of the state (i.e. the on-site drainage ditch). Therefore, staff concludes that the potential for this alternative to affect waters of the state and riparian habitat could be **similar to Mission Rock**.

Special-status species (both plants and wildlife but excluding nesting birds) have limited potential to occur on the site; a review of the CNDDB revealed no documented occurrences of listed species on or near the alternative site. There is a low likelihood for special-status plants, animals, or habitat to be present in the developed and agricultural areas immediately surrounding the site or along this alternative's transmission line route. Due to the low potential for these resources to be present, staff concludes that potential impacts on these resources could be **greater than Mission Rock** but probably less than significant. (Under CEQA, project alternatives are evaluated in a lesser level of detail than the proposed project. Surveys for riparian habitat and other biological resources will not be conducted for the alternatives to determine the presence or absence of biological resources for this alternative).

Construction for this alternative would be similar to Mission Rock. The same types of equipment would likely be used; therefore, levels of noise generated would generally be similar. Construction noise could disturb nesting birds that are protected under the Migratory Bird Treaty Act and Fish and Game Code sections 3503 and 3513. Suitable habitat for nesting birds in general could be located in areas near the alternative site, and the impact would be **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

Construction of Mission Rock would create noise levels that would disturb the least Bell's vireo, a state and federally listed endangered species, breeding in adjacent riparian habitat along the Santa Clara River. Under the Del Norte/Fifth Street Off-site Alternative, this impact would not occur because the nearest suitable least Bell's vireo nesting habitat is over 4½ miles away along the Santa Clara River. Therefore, **no impacts** on listed bird species (i.e., least Bell's vireo) are identified relating to construction noise under this alternative.

The construction timeline and processes for this alternative would be similar to Mission Rock. General construction impacts on biological resources such as lighting, storm water discharge, and spreading of invasive weeds are expected to occur regardless of the particular site; however, there is no known sensitive habitat within reasonable range of the Del Norte/Fifth Street alternative where potential impacts on biological resources could occur. At the Mission Rock site, riparian habitat occurs in the immediate vicinity of the project site, whereas habitat adjacent the Del Norte/Fifth Street alternative does not appear to be sensitive. General impacts from construction and demolition are therefore considered to be **less than Mission Rock**. These impacts could be reduced to less than significant with implementation of mitigation measures.

Project Operations Impacts

Noise impacts on listed species from operation of Mission Rock are expected to be less than significant, requiring no noise mitigation. There is no known least Bell's vireo habitat within audible range of this alternative site, and therefore, impacts from operational noise are expected to be less than significant. This impact is **similar to Mission Rock**.

There are no impacts from Mission Rock relating to nitrogen deposition. Staff's review of Google Earth imagery identified no sensitive habitat within several miles of the alternative site. Therefore, there would be **no impacts** from nitrogen deposition at the Del Norte/Fifth Street Off-site Alternative site, which is the same conclusion as for Mission Rock.

This alternative would require installing an approximately 10-mile-long transmission line, which could pose an electrocution hazard for large raptors if not constructed according to applicable guidelines, specifically the Avian Power Line Interaction Committee guidelines to protect raptors (Avian Power Line Interaction Committee 2012). The Mission Rock site would also require construction of power lines using the same guidelines to fully mitigate potentially significant impacts; therefore, the Del Norte/Fifth Street Off-site Alternative would have potential avian electrocution impacts **similar to Mission Rock**. In addition, the transmission line for the proposed project would impact listed species (southwestern willow flycatcher and willow flycatcher) due to collisions during nocturnal migration.

These impacts are considered significant. Mission Rock has a 6.6-mile-long transmission line while this off-site alternative would be approximately 10 miles long; therefore, impacts on listed avian species from the installation of a transmission line would be **greater than Mission Rock** due to the longer length of the line and the

corresponding increase in the potential risk for collision. Mitigation measures like those recommended for Mission Rock would be implemented to reduce impacts to less than significant.

Cultural Resources

The Del Norte/Fifth Street Off-site Alternative site is just north of the historic Southern Pacific (now Union Pacific) Montalvo Line. The railroad tracks parallel Fifth Street (SR 34). According to historical imagery from Google Earth, the site was a tank farm in 1989. By 2006, the tank farm was mostly removed and a gravel/construction materials operation began on the site. A large area of the approximately 12½-acre site appears to be undeveloped. A review of archival Google Earth imagery, circa 1989 to present, suggests that the northeast-east portion of the site has experienced less ground disturbance compared to the rest of the site.

Staff conducted a record search at the South Central Coastal Information Center (SCCIC) in March 2017. The record search indicated that 28 cultural resource studies were conducted within one-half mile of this alternative site. A total of fifteen prehistoric archaeological sites, six of which are on or adjacent to the site, were recorded within one-half mile of the site. No built environment resources were recorded within one-half mile of the alternative site.

Satellite imagery of the alternative site from October 2016 indicates that most of the site has been graded or otherwise disturbed and is denuded of most native vegetation. The condition of the site would likely preclude any hunting or gathering on the proposed site by Native Americans.

The archaeological and ethnographic setting presented in **Cultural Resources Appendix A** of this staff assessment applies also to this alternative.

Impacts on Surficial Archaeological and Ethnographic Resources

A review of historical topographic maps and archival Google Earth imagery did not reveal any surficial archaeological resources or ethnographic resources. The 1949 and 1951 U.S. Geological Survey 7.5 minute topographic maps show oil tanks on the north side of the railroad tracks, which were likely at this alternative site in the past but were removed sometime after 1951. A review of ethnographic maps indicates that a village site, *Casunaimu* (Northwest Economic Associates et al. 2004: Figure 44) or *Kasnalmu* (King 1971:175), was located very close to the Del Norte/Fifth Street Off-site Alternative. Inhabitants of the village site may be the cause of some of the 15 archaeological resources that were recorded within one-half mile of the site, including the six that are on or adjacent to the alternative site.

There are no sites recorded on the surface of the proposed Mission Rock project site, therefore staff concludes that potential impacts on surficial archaeological and ethnographic resources at the Del Norte/Fifth Street Off-site Alternative would be **greater than Mission Rock**. These impacts would be reduced to a less-than-significant level through project design or data collection.

Impacts on Buried Archaeological Resources

The Del Norte/Fifth Street Off-site Alternative is located on the large coastal alluvial fan of the Oxnard Plain. The deposits on which this alternative is located are classified as Qha1, Holocene alluvial deposits that were deposited as overbank material associated with unit Qhw1, Holocene wash deposits. These deposits are of an age and dispositional nature such that intact archaeological resources could be buried at this alternative site. The proposed Mission Rock site is also located in an area with a high potential for encountering buried archaeological resources; therefore, staff concludes that impacts on buried archaeological resources at the alternative site would be **similar to Mission Rock**. Impacts on any buried archaeological resources could likely be reduced to a less-than-significant level through a comprehensive cultural resources mitigation and monitoring plan.

Impacts on Built Environment Resources

No built environment resources of historic age have been previously recorded at the Del Norte/Fifth Street Off-site Alternative. Although a transmission line route for this alternative would likely be located along existing ROWs to the extent feasible, the route shown on **Alternatives Figure 8** is conceptual, and staff has no survey data from which to draw conclusions. Without the benefit of survey information about the transmission and pipeline routes and the precise locations of the transmission towers and pipelines, staff must presume that historic built environment resources could be identified that could be impacted under the Del Norte/Fifth Street Off-site Alternative. However, because of the likely greater number of resources within the Mission Rock project area, potential impacts on built-environment cultural resources for the Del Norte/Fifth Street Off-site Alternative are **less than Mission Rock**. (See the **Cultural Resources** section of this staff assessment for an assessment of impacts of the proposed project on the Santa Clara Valley Rural Historic District.) Mitigation measures would be recommended to avoid, minimize, or compensate for potential impacts under this alternative, which would likely reduce impacts to less-than-significant levels.

Conclusion

Impacts on surficial archaeological and ethnographic resources are possible under this alternative and would be **greater than Mission Rock**. Impacts on buried archaeological resources are also possible and would be **similar to Mission Rock**. Without survey data, staff is unable to determine the nature and location of potential impacts on built environment cultural resources under this alternative; however, given the considerable number of resources impacted by the proposed project, impacts on built environment resources under this alternative would likely be **less than Mission Rock**.

Geology and Paleontology

The Del Norte/Fifth Street Off-site Alternative is located approximately 7½ miles south-southwest (as the crow flies) of the proposed Mission Rock site. Topography of the site appears to be generally flat and underlain by sediments similar to the proposed Mission Rock site. Ground disturbance activities similar to that required to construct Mission Rock would be required for this alternative.

This alternative would have a similar potential to encounter and damage buried paleontological resources. Although paleontological resources have limited potential to occur, if such resources were encountered during excavation, potential impacts could be significant. Implementation of a paleontological resources monitoring program, such as the one described in the **Geology and Paleontology** section of this staff assessment (see Conditions of Certification **PAL-1** through **PAL-8**), would be required to reduce the severity of impacts to a less-than-significant level. Staff concludes that the relative severity of the potential impact under this alternative is **similar to Mission Rock**.

This alternative would have **no impacts** on mineralogical or geological resources because such resources are not present at the site.

There are no known active faults on the alternative site. Therefore, there is a less-than-significant fault rupture hazard, which is **similar to Mission Rock**.

This alternative would be subject to the same, very strong levels of earthquake-related ground shaking as Mission Rock. The Del Norte/Fifth Street Off-site Alternative would also be subject to the same, or slightly greater, potential for soil failure caused by liquefaction and/or dynamic compaction compared to Mission Rock. These potential impacts would require implementation of Condition of Certification **GEO-1** to reduce potential impacts to less than significant, **similar to Mission Rock**.

This alternative would be subject to the same risk of potential excessive settlement or expansion of soils as Mission Rock. The potential impacts from these conditions are less than significant, **similar to Mission Rock**.

Hazardous Materials Management

The Del Norte/Fifth Street Off-site Alternative would present a nearly identical hazardous materials risk profile as described for the Mission Rock site. Both would use natural gas as fuel and ammonia for selective-catalytic reduction of oxides of nitrogen in the combustion exhaust. Since the hazardous risk profiles are similar, this off-site alternative would present potentially significant impacts that are **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potentially significant impacts to less than significant.

Noise and Vibration

The nearest noise-sensitive land use to Mission Rock is two residences located approximately 1,125 feet east of the site. The nearest noise-sensitive land use to the Del Norte/Fifth Street Off-site Alternative is a residence located approximately 900 feet northeast of the site. Because these distances are similar, noise and vibration impacts associated with this alternative would be **similar to Mission Rock**. Impacts relating to noise and vibration would be reduced to less than significant with implementation of mitigation measures like those recommended for Mission Rock.

Public Health

As noted in the **Public Health** section of this staff assessment, the public health LORS that are cited and discussed are intended to ensure that all emissions from construction and routine operations for the proposed project or this alternative would be controlled to ensure levels without significant health impacts in the project or alternative site area.

The Del Norte/Fifth Street Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative would be located within the jurisdiction of the same local air district, the VCAPCD. The existing regulations on toxic air emissions are the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

It is expected that construction-related toxic air emissions for the Del Norte/Fifth Street Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, numbers, and types of equipment used would be similar for the construction at both sites. The Del Norte/Fifth Street Off-site Alternative is located in less complex terrain compared to the Mission Rock site, which could result in lower operating impacts, but staff does not expect there to be significant differences between the two sites regarding toxic emissions. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality would be reduced to less than significant with implementation of the same or similar mitigation measures that are recommended for the proposed project.

Socioeconomics

Staff assumes that a similar construction workforce would be required for the Del Norte/Fifth Street Off-site Alternative and that the construction timeline from site preparation to commercial operation would take approximately 23 months to complete, similar to Mission Rock. This alternative is within the Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area, which has a large labor supply that would meet this alternative's construction and operations workforce needs. This alternative would have a less-than-significant impact relating to population influx, **similar to Mission Rock**.

This alternative site is an industrial property, and construction of a project similar to Mission Rock at the site would not displace people or housing, or necessitate the need for replacement housing to be constructed elsewhere. Like Mission Rock, **no impact** would occur.

With the ample local workforce, there would be no substantial increases in demand for parks and recreation facilities, law enforcement services, or schools. Thus, this alternative would have less-than-significant impacts on these services and facilities, **similar to Mission Rock**.

Expenditures for equipment and labor necessary to construct and operate this alternative would be similar to those for Mission Rock. The estimated fiscal benefits would have a beneficial impact, **similar to Mission Rock**.

A control building and garage/warehouse building would need to be constructed. As school impact fees are imposed on new and reconstructed covered and enclosed commercial/industrial space, this alternative would require a condition of certification similar to **SOCIO-1**, which is recommended for Mission Rock, to ensure payment to the specific school district(s) in which the site is located and compliance with socioeconomics LORS.

Soil and Water Resources

The Del Norte/Fifth Street Off-site Alternative is located in the city of Oxnard and is serviced by Oxnard's potable water system and municipal wastewater system. Both the Mission Rock site and the alternative site are in the jurisdictional region of the Los Angeles Regional Water Quality Control Board (LARWQCB), although this off-site alternative is in the Calleguas Creek Wastershed. The site is approximately 7 miles east of the ocean and roughly 6 miles south of the Santa Clara River. The nearest water resource, about a mile to the east, is the Revolon Slough. Containing primarily storm water and agricultural runoff, it flows from north (in the Camarillo Hills) to south (into Mugu Lagoon) before draining to the ocean.

The alternative site would require construction of a 230-kV transmission line and a natural gas pipeline large enough to accommodate a 275-MW power plant. Connecting to the electric grid at the Ormond Beach Substation would involve installation of towers and overhead lines along an approximately 10-mile route bordering mostly agricultural land. Connecting to the existing 30- to 36-inch diameter gas pipeline would require approximately 1.8 miles of underground pipeline installation to avoid encroaching on the Union Pacific Railroad easement.

Construction-related Impacts

Staff assumes that the entire 12½-acre site would require light grading for site preparation and construction laydown. Deeper excavation would occur for the power block foundation, in addition to foundations for new administration and warehouse/lab buildings, and pads for various ancillary facilities (water storage tanks, firewater pump, ammonia tanks, etc.).

Trenching to install underground pipelines would take place on-site to connect to Oxnard's potable water and municipal wastewater systems, and off-site to connect to the natural gas pipeline approximately 1 mile away.

Compared to the Mission Rock site, construction activities at the Del Norte/Fifth Street Off-site Alternative site would result in much less earthwork because Mission Rock would use approximately 120,000 cubic feet of imported fill material to elevate the entire site above the Santa Clara River floodplain. However, construction activities for both sites would be subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permits including California's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Impacts on water quality would be minimized through compliance with the Construction General Permit and other applicable NPDES permits.

Required implementation of specific best management practices (BMPs) for erosion control and wastewater management, in addition to numeric action levels (NALs) to evaluate the effectiveness of BMPs, would achieve minimum water quality standards. Although the amount of earthwork for Mission Rock is considerable, compliance with the Construction General Permit would reduce potential impacts to less than significant. Similarly, construction activities at the alternative site would be subject to the Construction General Permit, which would reduce impacts to less than significant, **similar to Mission Rock**.

Storm Water Impacts

Development at the alternative site would not impact the course of a stream or river. Although a site-specific drainage study is needed to properly evaluate the adequacy of on-site drainage management, a storm water collection system similar to that proposed at the 10-acre Mission Rock site could likely manage storm water at the Del Norte/Fifth Street Off-site Alternative site. In addition, Oxnard imposes the same water quality requirements for new development and redevelopment projects as does Ventura County, including the engineering calculations and analysis in accordance with Ventura County's technical guidance manual. To satisfy those requirements, it must be demonstrated that the post-construction storm water controls will function appropriately. Implementation of these requirements at the alternative site would reduce potential storm water impacts to less than significant, **same as Mission Rock**.

Flooding Hazard

The Federal Emergency Management Agency (FEMA) flood hazard map shows that a large storm event would likely cause the Revolon Slough to flood adjacent land. However, the alternative site is located a distance far enough to be outside both the 1 percent and 0.2 percent annual chance flood hazard (also referred to as the 100- and 500-year event floodplain). In comparison, the proposed placement of infill material would elevate the Mission Rock site to remove it from the 100-year floodplain. While this would reduce the flooding potential at the Mission Rock site, the properties surrounding the site would be within the floodplain. Because the Del Norte/Fifth Street Off-site Alternative site is located outside the 500-year floodplain, **no impact** would occur relating to a potential flooding hazard.

Wastewater Discharge Impacts

Because the alternative site is not within a reasonable distance of Oxnard's existing recycled water distribution system, staff assumes that its water supply would be Oxnard's potable water system. Although the alternative site would use the same technology as Mission Rock to generate the same amount of power, the quantity and quality of generated wastewater could be somewhat different due to the water quality differences between potable water and recycled water.

For example, as water is evaporated in the chiller towers, minerals are left behind in the recirculating water. As evaporation continues, the water becomes more concentrated than the original water. To prevent this increasing concentration from forming scale, a certain amount of concentrated recirculating water bleed off (referred to as blow down) is replaced with new supply water (referred to as make-up water).

Generally speaking, the higher quality potable water can be recirculated longer before mineral concentrations become too high, which typically results in less overall water use compared to recycled water (see the discussion below under "Impacts on Water Supply"). Also, increased concentration of other impurities present in the recycled water could affect the quality of blow down water. This potential difference in the quantity and quality of generated wastewater could limit options of proper wastewater disposal.

The alternative site would be serviced by Oxnard's municipal wastewater system, which is expected to accept sanitary waste. Generated process wastewater would also discharge to the municipal wastewater system, assuming these flows meet water quality criteria acceptable to Oxnard. This is a reasonable assumption because Oxnard operates an offshore ocean outfall that allows discharges of secondary-treated effluent and brine waste. Because Oxnard's wastewater treatment plant is licensed and regulated under waste discharge requirements issued by the LARWQCB, impacts would be reduced to less than significant, **similar to Mission Rock**.

Impacts on Water Quality

Potential impacts on water quality at the Del Norte/Fifth Street Off-site Alternative would be less than Mission Rock mainly due to its greater relative distance to surface water resources. Potential impacts on groundwater would also be less because an underground septic system presumably would not be needed. Despite a lower potential to impact water quality, this alternative would need to comply with the same requirements imposed on Mission Rock such as a hazardous materials management program, spill control and prevention, and other measures to avoid or reduce the potential discharge of contaminants. With these requirements implemented, impacts on water quality would be **similar to Mission Rock**.

Impacts on Water Supply

Because the Del Norte/Fifth Street Off-site Alternative site is not within a reasonable distance of Oxnard's existing recycled water distribution system, staff assumes that its water supply would be Oxnard's potable water system. As discussed above, the use of higher quality potable water typically results in less overall water use compared to recycled water.

However, the state's water policy prefers the use of recycled water for activities suitable for non-potable water use (e.g., evaporative cooling), because it conserves fresh water supplies for other beneficial uses.

To ensure that new development does not adversely affect the water supply or water supply reliability, Oxnard established a "Water Neutrality Policy," which requires that all new development offset its potable water demand. The availability of potential options to offset new potable water uses in Oxnard is unknown, but staff assumes the relatively small amount needed (approximately 10 acre-feet per year[8]) would lend to the feasibility of obtaining offsets for water use. While Mission Rock would avoid use of potable water

[8] An estimated annual use of water is 67 acre-feet under the maximum scenario of 2,500 hours of operation, or 10 acre-feet under a more realistic operating profile of 500 hours per year.

for industrial processes, this alternative would essentially replace its potable water use through compliance with the Water Neutrality Policy. As a result, staff concludes that this alternative would cause **no impacts** on the regional potable water supply, which is the same conclusion as for Mission Rock.

Traffic and Transportation

Construction Workforce Traffic

Construction workers would travel through an already congested area, U.S. Route 101 (US 101) at N. Del Norte Boulevard, to access the Del Norte/Fifth Street Off-site Alternative site. According to the *Ventura County Congestion Management Program*, traffic flow in this area drops to LOS F during commute hours (Ventura County Transportation Commission 2009). Furthermore, under this off-site alternative, some construction traffic would likely cross the signalized railroad crossing at S. Del Norte Boulevard, and train movements could contribute to traffic congestion.

Mission Rock would require approximately 60 daily infill soil truck trips during peak construction to raise the site out of the flood zone. This off-site alternative would not require any site infill and therefore would require less overall truck trips. However, the existing traffic flow along US 101 is falling to LOS F at certain locations during peak hours of the day. Staff concludes the Del Norte/Fifth Street Off-site Alternative's temporary construction-related impacts on traffic LOS would be **similar to Mission Rock**. Traffic impacts under this alternative could be reduced to less than significant by implementing a traffic control plan and obtaining applicable encroachment permits.

Driver Safety

The existing access to the Del Norte/Fifth Street Off-site Alternative site is on S. Del Norte Boulevard. The driveway at the site entrance is unsignalized. If site access for this alternative was established at the same location, most construction vehicles would likely exit directly right onto northbound S. Del Norte Boulevard to access US 101 and would not need to cross lanes of opposing traffic. However, some vehicles might exit left onto southbound S. Del Norte Boulevard, where they would cross a lane of northbound traffic and could be at greater risk of a collision.

Additionally, these vehicles turning left would encounter the signalized railroad crossing at S. Del Norte Boulevard just north of Fifth Street. There is a small risk at rail crossings of inattentive or reckless drivers becoming caught on the railroad tracks and colliding with a train. However, given that the crossing is signalized, the risk of collision is reduced.

Traffic entering or leaving Mission Rock would turn onto South Briggs Road, before merging onto State Route (SR) 126 via the east or west bound ramps. The intersections of South Briggs Road and the highway ramps are unsignalized. Traffic is regulated by stop signs located at the end of the SR 126 off ramps. Although this is a relatively low trafficked area, special procedures could be required to safely transport oversized loads through these intersections. Driver safety impacts for the Del Norte/Fifth Street Off-site Alternative would be **similar to Mission Rock**. A traffic control plan would reduce potentially significant impacts to less than significant.

Damage to Roads and Bridges

Construction at the Del Norte/Fifth Street Off-site Alternative site would require truck trips that could damage roads. Impacts would be potentially significant but could be reduced to less than significant with preparation and implementation of a traffic control plan, including a requirement to repair and restore damaged roads. Because Mission Rock would require additional soil infill truck trips associated with raising the site out of the flood zone, the potential for damage to roads from the Del Norte/Fifth Street Off-site Alternative would be **less than Mission Rock**.

Operations Traffic

The same number of operations workers (15 workers) and truck deliveries would be used for the Del Norte/Fifth Street Off-site Alternative and the Mission Rock site. The location of this off-site alternative would add new project operations vehicle trips to the area; however, the number of operations workers and deliveries would be relatively small and would not generate significant impacts on traffic LOS. Due to the small number of operations workers and deliveries, impacts would be **similar to Mission Rock** and less than significant.

Potential Impact of Thermal Plumes on Aircraft and Pilot Safety

The Del Norte/Fifth Street Off-site Alternative is located approximately 1½ miles southwest of Camarillo Airport and 4 miles east of Oxnard Airport. Aircraft directly overflying the alternative site could be subject to hazards from a power plant's high-velocity thermal plumes, which could potentially pose hazards to aircraft up to approximately 1,490 feet above ground level (AGL). The potential hazard assumes worst-case conditions, such as during full operation of the power plant in cool weather conditions with calm winds.

Given its location approximately 4 miles from this off-site alternative, air traffic related to Oxnard Airport would not likely need to pass over the site at low altitudes. The traffic pattern altitude of the Oxnard Airport for single-engine aircraft is 1,000 feet AGL.

For multi-engine aircraft and jets, the pattern altitude is 1,400 feet AGL (AIRNAV 2017b). Staff concludes that this off-site alternative would not cause a significant impact on the Oxnard Airport and its aircraft operations.

For the Camarillo Airport, based on staff's review of the arrival and departure tracks shown in Exhibits 2F and 2G of the *Airport Comprehensive Land Use Plan for Ventura County* (Ventura County ACLUP), arriving aircraft and arriving and departing helicopters often pass very close to, if not directly over, the Del Norte/Fifth Street Off-site Alternative site. The published traffic pattern altitude is 875 mean sea level (MSL) feet for single engine aircraft and 1,075 MSL feet for twin engine/turbine aircraft (Ventura County Airport Land Use Commission 2000).

Under the Mission Rock project, aircraft following the Santa Paula Airport's traffic pattern would not be expected to fly over the Mission Rock site. Although overflight near Mission Rock could occur on route to the traffic pattern, with proper warning it is reasonable to expect that pilots could safely avoid overflight.

(See the **Traffic and Transportation** section of this staff assessment for further discussion on this topic.)

This alternative would introduce a new hazard for pilots to avoid near the traffic pattern and in an area commonly overflown by pilots arriving and departing from Camarillo Airport. Because of the expected more regular aircraft overflight of the Del Norte/Fifth Street Off-site Alternative and its closer proximity to an airport, impacts on aircraft and pilot safety from the Del Norte/Fifth Street Off-site Alternative would be **greater than Mission Rock**, and the impact conclusion is significant. Mitigation measures requiring a complete redesign of the published traffic patterns for departures, arrivals, and helicopter tracks could reduce this impact to less than significant. However, staff is not certain that a complete redesign of the published traffic patterns is a feasible mitigation measure. Staff ultimately concludes that this significant impact with potentially infeasible mitigation could create a potentially significant and unavoidable impact for the Del Norte/Fifth Street Off-site Alternative.

Potential for Power Plant Structures to Impact Aircraft and Pilot Safety

The Del Norte/Fifth Street Off-site Alternative is approximately 1½ miles southwest of Camarillo Airport, which has a runway longer than 3,200 feet. Therefore, the Federal Aviation Administration (FAA) regulations apply, and the threshold for FAA notification at the site would be a structure height of 73.9 feet. (The applicable federal regulations are described above under the “Traffic and Transportation” analysis for the Petrochem Refinery Off-site Alternative.)

Construction of a project like Mission Rock at the alternative site would include five, 60-foot-tall exhaust stacks, which would not penetrate the navigable airspace for Camarillo Airport. However, due to the proximity of the site to the air navigation equipment at Camarillo Airport, these structures could potentially impact the assurance of navigation signal reception. For Mission Rock, the applicant must file a Notice of Proposed Construction or Alteration (Form 7460-1) with the FAA to initiate the FAA’s obstruction hazard review for the proposed project’s exhaust stacks and electric transmission system. (The Mission Rock site is close to 3½ miles southwest of the Santa Paula Airport.)

The analysis of potential impacts of these structures on navigation signals would require an FAA hazard determination. As of publication of this staff assessment, staff has not received a completed FAA hazard determination for Form 7460-1 for the proposed project.

Like Mission Rock, the Del Norte/Fifth Street Off-site Alternative would require an FAA hazard determination for Form 7460-1. The FAA provides a Notice of Criteria Tool used to determine whether a structure or project would trigger FAA review. According to the results of this tool, the 60-foot-tall exhaust stacks at the Del Norte/Fifth Street Off-site Alternative would require FAA review, due to potential risk of aviation navigation reception interference. The potential impacts on navigation signals for both the Del Norte/Fifth Street Off-site Alternative and the Mission Rock site relating to the exhaust stacks are unknown without determinations from the FAA.

Given the relatively close distance of this alternative site to the Camarillo Airport, staff estimates that there would likely be a greater potential for an impact to occur at this site compared to Mission Rock, and the impact could be **greater than Mission Rock**. Without an FAA review, the comparative impact conclusion is indeterminate.

The proposed project's 80- to 200-foot-tall transmission structures would exceed the FAA's threshold for structure height, requiring the applicant to file Form 7460-1 to initiate the FAA's obstruction hazard review of the structures. For Mission Rock's electric transmission system, the reason for the FAA Form 7460-1 filing is not based on the potential to surpass the imaginary surface slope but rather the potential for aircraft navigation signal interference. The analysis of potential impacts of these structures on aircraft would require an FAA hazard determination. Staff has not yet received a completed FAA hazard determination for Form 7460-1 for the proposed project.

Like Mission Rock, the Del Norte/Fifth Street Off-site Alternative would also require an FAA hazard determination for Form 7460-1. The conceptual off-site alternative transmission system would likely exceed the imaginary surface detailed in Title 14 of the Code of Federal Regulations, Section 77.9 and interfere with navigational reception. The transmission system design for Mission Rock and the conceptual route for this off-site alternative include portions of transmission line in what would be new utility ROW. Both Mission Rock and this off-site alternative would be required to file a Form 7460-1 with the FAA. Given the proximity of this alternative site to the Camarillo Airport, staff concludes that the potential impact of the electric transmission system on aviation safety would likely be **greater than Mission Rock**; however, without the FAA hazard review, the impact conclusion is indeterminate.

Staff concludes that, **similar to Mission Rock**, the exhaust stacks would not create a significant physical obstruction to arrival/departure tracks at the Mission Rock site or this alternative site, and the impact conclusion for both sites is less than significant.

Visual Resources

This subsection discusses the visual setting and estimates viewer concern for viewer groups in the area where the Del Norte/Fifth Street Off-site Alternative is located. Comparative visual impacts of this alternative to Mission Rock follow the setting discussion.

Visual Setting, Viewer Concern, and Viewer Exposure

This alternative site is developed with industrial uses. A concrete batch plant is situated on the center of the site, including a powder material storage silo estimated to be approximately 120 feet tall (**Alternatives Figure 10**). Utilitarian single-story buildings, storage areas, and other structures are located on the site. These on-site uses are unscreened, and visual quality is *low*.

A small-scale (approximately 13-acre) oil refinery on the south side of E. Fifth Street includes processing facilities estimated to be 60 feet tall and a roughly 150-foot-tall oil derrick (**Alternatives Figure 11**).

The combined effect of the existing concrete plant and adjacent oil refinery results in *low* visual quality in the E. Fifth Street corridor within foreground distance of the alternative site. To the northwest is a large regional recycling center. The nearby areas west and north of the site are almost completely developed with a mixture of warehouse commercial, research and development, and light industry business park uses. The industrial area along the north side of E. Fifth Street extends approximately 2½ miles west, toward the more developed center of Oxnard.

Nevertheless, Oxnard includes Fifth Street and Del Norte Boulevard on its list of scenic routes identified in the city's general plan (City of Oxnard 2006). An extensive level plain of open agricultural land is located south and east of the alternative site, providing scenic views of the landscape to the south of the roadway.

Visual quality within the adjacent light industry business park to the northwest is *moderate*, characterized by ample street frontage landscaping, landscaped street medians, and typical low-rise office park architecture. Staff estimates that visibility of this alternative's tallest project features would be low or non-existent from the nearby business park due to intervening buildings; therefore, viewer sensitivity is limited. Visual quality in the agricultural areas is also *moderate*, and is generally visually intact but lacking highly vivid scenic features.

Based on staff's observations during a site visit in April 2016, primary viewer groups near the site include motorists in passenger vehicles and truck drivers traveling in the area to conduct business, deliver and purchase goods and supplies, and work in the agricultural fields and at businesses near the site. These local viewers would have a *moderate* level of concern for the character and quality of views in the area of this alternative site. Because of the lack of visual screening of the property, viewer exposure to the site, primarily from adjacent roadways, is relatively *high*.

A power plant like Mission Rock at this alternative site could attract the attention of viewers from roadways adjacent to the site, especially from the immediate vicinity of S. Del Norte Boulevard and E. Fifth Street (SR 34). Otherwise, visibility would be *moderate* within a distance of roughly one-half mile, and *low* beyond that distance.

Alternatives Figure 12 provides a view of the landscape looking northwest toward the site from E. Pleasant Valley Road; this viewpoint is approximately 1 mile from the Del Norte/Fifth Street Off-site Alternative. Built structures in the background primarily include low, horizontal buildings in agricultural areas. The oil derrick on the property south of the alternative site is visible in this view. The concrete batch plant silo on the site is barely visible in the background. Foreground views in the area are mostly characterized by flat, cultivated and fallow fields and associated structures. Staff estimates that visibility of a power plant like Mission Rock at this alternative site would be *low* for motorists on E. Pleasant Valley Road and other local roadways south of the site due to distance. For views beyond one-half mile, visibility of the site would generally be *low*.

The nearest residential development is the East Village development approximately 1.3 miles northwest of the alternative site. At this distance, these viewers would be beyond

the range of project visibility. There are no recreational or other scenically sensitive uses or destinations in this alternative's visual sphere of influence.

Visual Impacts

The Del Norte/Fifth Street Off-site Alternative would modify existing visual conditions, increasing the bulk and mass of industrial-type structures at the site that would be visible from the surrounding area. Visually prominent elements would include five, 60-foot-tall exhaust stacks; 48- and 54-foot-tall water storage tanks (two storage tanks);

and three, 65-foot-tall transformer dead end structures. Other visible features would include transmission line structures that would exit the site to the east to parallel E. Fifth Street (**Alternatives Figure 8**). The visual prominence of this alternative can be estimated by noting that the tallest project elements of a project like Mission Rock would be similar to or lower than the existing structures at the concrete batch plant and adjacent oil refinery. Within the context of the existing industrial developments, this alternative could, without mitigation measures imposed, increase the visual dominance of structures on the site to a degree and have *moderately high* visual contrast.

There are no designated scenic vistas in the vicinity of the Del Norte/Fifth Street Off-site Alternative (or the proposed project). Both Fifth Street and Del Norte Boulevard are included in Oxnard's list of scenic routes (City of Oxnard 2006). Scenic views from Fifth Street consist of the views of open agricultural land to the south of the roadway and low hills in the distant background. The alternative site, located north of the road, would not obstruct those views. Thus, scenic views would not be affected by this alternative.

This off-site alternative is not near a state-designated scenic highway, and there are no on-site scenic resources that would be affected. Therefore, **no impacts** would occur that could affect a scenic vista or scenic resources (including scenic resources within a state scenic highway).

As seen by motorists on E. Fifth Street, visual quality of the site could decline somewhat due to the greater prominence of the power plant, which would be similar in its industrial visual character but larger in bulk and mass compared to the existing concrete plant and adjacent oil refinery. Mitigation measures to reduce potential visual impacts would include treating surfaces of project structures to decrease visual contrast with the surrounding environment, and installing site periphery screening such as an opaque fence, decorative wall, or tall tree plantings and other drought tolerant landscape plantings to screen and soften views of the site. Such measures could result in a net improvement of the existing visual quality of the site and vicinity. Mitigation measures to improve visual quality at the site would be consistent with the city's intention to protect and presumably improve the view corridors along scenic roadways. With implementation of mitigation measures, staff concludes that potential visual impacts on nearby motorists, business park employees, and other workers near the site would be reduced to less-than-significant levels.

Nighttime light and glare impacts could occur during construction and operation of this alternative. However, due to the relatively low height of power plant structures requiring lighting for safety and security, and with implementation of mitigation measures similar to those recommended for Mission Rock, potential light and glare impacts would be reduced to less than significant.

Comparative Impact Conclusions

Although both the proposed project and the Del Norte/Fifth Street Off-site Alternative would cause less-than-significant visual impacts with implementation of mitigation measures, Mission Rock's major visual effect would be caused by portions of the 6.6 miles of transmission line that would impact high-sensitivity visual and historical resources in that viewshed (i.e., the Santa Clara Valley Rural Historic District (SCVRHD) described in the **Cultural Resources** section of this staff assessment). Even with conditions of certification imposed to reduce visual impacts, the Mission Rock transmission line would remain highly visible in proximity to numerous visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse effects. (See the **Visual Resources** section of this staff assessment for a description of scenic resources associated with the SCVRHD.) No comparable scenic and historical resources or sensitivities are identified in this alternative's viewshed. Therefore, overall impacts on scenic resources under this alternative would be considerably **less than Mission Rock**.

In comparing the potential impact on visual character or quality, staff considered the relatively high level of viewer exposure given that the alternative site is adjacent to heavily traveled roadways.

However, viewer concern is considered *moderate*, whereas viewer concern in the Mission Rock viewshed where the transmission line would be installed is likely *high* due to the presence of the SCVRHD. Because of the significant visual impact of the proposed project due to the transmission line, staff concludes that the potential for this alternative to substantially degrade the existing visual character or quality of the site and its surroundings is **less than Mission Rock**.

Impacts of the Del Norte/Fifth Street Off-site Alternative on nearby motorists are potentially significant with no mitigation measures imposed. With implementation of available mitigation measures, particularly visual screening of the power plant site with perimeter tree planting and facility color treatment, the potential visual impacts of this alternative would be reduced to less-than-significant.

Connecting the Del Norte/Fifth Street Off-site Alternative to the electrical grid would require installing transmission structures and a new, approximately 10-mile-long 230-kV transmission line to extend south from the site to the Ormond Beach Substation (**Alternatives Figure 8**). The area of this route follows existing roadway and utility corridors and does not have the visual and historical sensitivities that characterize the Mission Rock transmission ROW. Given the estimated lower level of visual sensitivity of this viewshed compared to that of Mission Rock, and with implementation of a mitigation measure to reduce visual contrast of the transmission structures with the rural, agricultural landscape, the potential impact would be reduced to less than significant. (See the **Visual Resources** section of this staff assessment for conditions of

certification recommending surface treatments for project structures, including transmission structures.) Staff concludes that the potential for this alternative to create a new source of substantial light or glare during the daytime or nighttime would be **similar to Mission Rock**, and the impact conclusion is potentially significant. Mitigation measures to minimize nighttime light pollution, avoid reflected glare, and ensure that light sources are not visible from areas beyond the site would reduce potential impacts to less than significant.

Waste Management

Waste management LORS are applied at the local and statewide levels to ensure safe handling and disposal of solid and hazardous waste from any facility.

Staff considers waste generation and the potential for contamination in assessing the environmental suitability of a project as proposed and at alternative sites. The waste impacts of concern are those occurring on-site and at disposal facilities and would be related to clearance, construction, and operational activities.

This alternative site covers approximately 12½ acres compared to 9.79 acres for the Mission Rock site. Industrial land uses are located on a large portion of the site and thus the site has a history of industrial uses. Records show that contamination in the soil and groundwater was remediated in the past. As with the Mission Rock and other sites, Energy Commission staff would require preparation, submittal, and implementation of a *Soil Management Plan* before any development-related clearance, construction, and operational activities could occur.

The plan would ensure that any waste management impacts would be reduced to less-than-significant levels. Therefore, potential impacts from past or present site uses would be **similar to Mission Rock** and less than significant with mitigation measures imposed.

The waste management LORS that apply to the proposed and other waste-generating projects would also apply to wastes generated under this off-site alternative. Therefore, the potential for impacts on human health and the environment from potential on-site waste discharges would be **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

Demolition of structures at this alternative site would increase on-site waste generation. More than 75 percent of the demolition waste would be recycled as required by Assembly Bill 341. The applicant would be required to comply with waste management mitigation measures and applicable LORS to reduce impacts on available disposal facilities while minimizing the impacts on human health. This impact is **similar to Mission Rock** and would be reduced to less than significant.

Worker Safety and Fire Protection

The Del Norte/Fifth Street Off-site Alternative would have the same worker safety and fire protection requirements as the proposed project.

This alternative assumes construction and operation of a power plant that is the same as Mission Rock, although the site arrangement would be somewhat different. This off-site alternative would cause potentially significant impacts that are **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potentially significant impacts to less than significant.

In conversations with the Ventura County Fire Department (VCFD), staff was informed that the VCFD is capable of responding to all emergency service needs (fire, rescue, hazardous materials spill, and medical) throughout the county in a timely manner, and no additional mitigation measures would be needed for a new power plant project in the county. Because the VCFD has dispatch authority linked to all fire departments in the county, and not just within its own jurisdiction and its own response teams, drawdown of resources would be extremely rare. Therefore, staff concludes that like the proposed project, **no impacts** would occur relating to emergency response time or risk of significant drawdown of emergency medical services.

ORMOND BEACH AREA OFF-SITE ALTERNATIVE

Staff evaluated the potential environmental impacts of developing a project similar to Mission Rock on an approximately 13½-acre undeveloped industrial site in the southeast portion of Oxnard. The site is located approximately one-half mile inland from Ormond Beach and just east of (outside) the Coastal Zone boundary. The site addresses are 5980 and 6000 Arcturus Avenue near the intersection with E. McWane Boulevard (**Alternatives Figure 13**). The site is composed of two parcels owned by Arcturus Warehouse, LLC (APNs 2310093135 and 2310093155). Staff is analyzing this off-site alternative under the Energy Commission proceeding for the Puente Power Project (docket number 15-AFC-01).

The site topography is flat. Historical Google Earth images through 2009 show an industrial development covering the majority of the site. A railroad spur extended into the site's northeast border, which must have served to transport materials to and from the industrial area on the southern portion of the site. As of 2011, the site had been cleared of most structures except for the old railroad spur. Early in 2016, the site was graded and surfaced with gravel or other similar material. Based on staff's observations during site visits in April and November 2016, the site is being used by KIA Motor Corporation to park new vehicles off-loaded from cargo ships at the Port of Hueneme.

The immediate surrounding area is characterized by industrial-type uses to the east and west (**Alternatives Figure 14**). Businesses on the properties immediately east of the Ormond Beach Area Off-site Alternative include Aluminum Precision Products and Irwin Industries, which fabricates energy and industrial infrastructure. The property west of the site is occupied by Arcturus Manufacturing Corporation, which provides customized product and material solutions for aerospace and power generation. A large BMW vehicle distribution center is located north of the site. The area south of the site includes open space and agricultural lands.

The closest residential neighborhood is located approximately one-half mile northwest of the approximate center point of the off-site alternative, on the north side of E. Hueneme Road between Saviers Road and Arcturus Avenue.

The utility corridor bordering the east side of Edison Drive approximately one-quarter mile east of the Ormond Beach Area Off-site Alternative includes the Ormond Beach-Moorpark 220/230-kV transmission line that extends south to the Southern California Edison (SCE) Ormond Beach Substation adjacent to the Ormond Beach Generating Station (OBGS) (**Alternatives Figure 13**). A 30- to 36-inch diameter natural gas pipeline is located in the same utility corridor along Edison Drive (**Alternatives Figure 14**). Providing natural gas to the site would likely require constructing a natural gas pipeline along E. McWane Boulevard to connect to the existing pipeline. The natural gas pipeline would require constructing the buried pipeline to cross under Edison Drive and the transmission line corridor that parallels Edison Drive for a total distance of approximately one-quarter mile from the southeast corner of the site.

This off-site alternative is within Oxnard's recycled water distribution area. A segment of Oxnard's recycled water transmission main system parallels E. Hueneme Road approximately one-half mile north of the site (**Alternatives Figure 14**). Connecting this off-site alternative to the recycled water pipeline could be accomplished assuming the necessary ROW along Arcturus Avenue is available or could be obtained for pipeline installation.

Oxnard's wastewater system (eastern trunk sewer line) and potable water pipelines border the site along Arcturus Avenue and E. McWane Boulevard (**Alternatives Figure 14**). It is assumed that this off-site alternative could tap into the sewer line and the potable water line for sanitary and domestic water.

The Ormond Beach Area Off-site Alternative would require constructing an on-site power plant switchyard. Connecting this alternative to the electrical grid would require a single-circuit, three-phase, 230-kV generator tie-line to extend east along a short segment of E. McWane Boulevard and then south along the utility corridor that parallels the east side of Edison Drive to the Ormond Beach Substation next to the OBGS (total length approximately three-quarter mile) (**Alternatives Figure 13**). Power would be distributed from the Ormond Beach Substation to the SCE transmission system. Based on the Mission Rock project description (and with similar assumptions for this alternative), the 230-kV generator tie-line would be supported by steel structures ranging from approximately 80–156 feet tall.

The area between this off-site alternative and its potential grid connection is not near residential areas or other sensitive land uses. However, construction and installation of the transmission line would require implementation of mitigation measures to reduce or avoid potential impacts to less than significant (e.g., construction-related impacts on water quality, air quality, and biological resources).

Land Use Planning

To determine potential consistency of the Ormond Beach Area Off-site Alternative with land use LORS, staff reviewed the *City of Oxnard 2030 General Plan Goals & Policies* (general plan), the *City of Oxnard 2030 General Plan Map*, the city's zoning ordinance, and the *Airport Comprehensive Land Use Plan for Ventura County* (Ventura County ACLUP). The site is designated by the general plan as Industrial Light (ILT), which

allows manufacturing uses “where the principal activity occurs within a building, but also permits outdoor assembly, fabrication, work/live, public services, and storage. Uses must follow high development and performance standards” (City of Oxnard 2011, 2014). Development of a power plant similar to Mission Rock at this site could require a general plan amendment to change the land use designation to one compatible with an electrical generating facility, such as Industrial Heavy (IH). The zoning district for this alternative site is Heavy Manufacturing (M2) with a Planned Development (Additive) Zone (M2-PD). The M2 zone allows many uses, including chemical processing and manufacturing (e.g., acetylene gas, acid, alcohol, ammonia, chlorine); manufacture of building materials (e.g., asphalt, brick, cement); bulk storage of flammable liquids and liquefied gases; petroleum refining; steam electric generating stations operated by gas or fuel oil; and other similar uses the city of Oxnard (city) finds to be consistent with the purpose and intent of this zone. The M2 zone has a building height limit at the street line of eight stories or 100 feet.[9] The buildings and the exhaust stacks and other structures of a project similar to Mission Rock at this alternative site would not exceed the height limit. The PD Additive Zone is intended to ensure the orderly development of land in conformance with the general plan and to permit departures from the restrictions imposed within the basic zones (Sections 16-245, -247, and -270 of the zoning ordinance). A narrow area inside the southern boundary of the Ormond Beach Area Off-site Alternative is zoned M2 without the PD Additive Zone.

Under the Energy Commission’s in lieu permitting authority, Energy Commission staff would have to determine that the proposed use would conform with the general plan and other adopted standards. Development of a project similar to Mission Rock at this alternative site would likely require a general plan amendment to change the land use designation of the site to IH. This land use designation would be consistent with the existing M2 zoning district (City of Oxnard 2011).

The zoning ordinance specifies that no new development of structures or outdoor uses is permitted in the M2 zone without a special use permit from the city. Special use permits are granted based on conditions and limitations deemed necessary to preserve the integrity and character of the zoning district, the utility and value of adjacent property, and the general welfare of the neighborhood and the public (Sections 16-246 and -530 of the zoning ordinance).

This alternative site is within the Ventura County ACLUP, and specifically within the Naval Base Ventura County (NBVC) Point Mugu Naval Airport Land Use Study Area. Based on Figure 6D in the ACLUP, this alternative site is not within the noise contours, clear zone, accident potential zone-1, accident potential zone-2, or traffic pattern zone of the NBVC Point Mugu (Ventura County Airport Land Use Commission 2000).

The Ormond Beach Area Off-site Alternative contains two parcels; development of a facility at the site would require the applicant to comply with the setback requirements

[9] The city’s zoning ordinance defines “building” to include a structure built for the support, shelter, or enclosure of people, animals, or property of any kind (other than real estate) (Section 16-10 of the zoning ordinance).

specified for the underlying zone district to avoid constructing over parcel lines. Alternatively, an applicant could pursue merging the two parcels to form one parcel.

Although the Energy Commission would have in lieu permitting authority for an electric generating facility at the Ormond Beach Area Off-site Alternative, Section 25506 of the Warren-Alquist Act requires the Energy Commission to request comments and recommendations from appropriate government agencies (e.g., a local municipality) regarding the design, operation, and location of the facilities in relation to environmental quality, public health and safety, and other factors on which they may have expertise.

With a general plan amendment to change the land use designation to Industrial Heavy (IH), the Ormond Beach Area Off-site Alternative could potentially be designed to be consistent with applicable land use LORS.

Potential to Attain the Project Objectives

The basic project objectives address developing a 275-MW natural gas-fired power plant to provide dispatchable, flexible, and efficient energy generation and a 25-MW battery energy storage system at the site. The primary objective or underlying purpose of Mission Rock is to meet the local capacity requirement (LCR) need in the Moorpark sub-area of the Big Creek/Ventura local reliability area by 2021.

The Ormond Beach Area Off-site Alternative site is in the Moorpark sub-area and could, in theory, provide a location to develop a project similar to Mission Rock. However, it is uncertain whether the applicant could obtain site control and complete environmental review and licensing to have a project built and commissioned at the Ormond Beach Area Off-site Alternative site to meet LCR needs by 2021.

The last two objectives address siting the project as near as possible to an SCE substation with available transmission capacity to serve the Moorpark sub-area and reusing a brownfield site in an industrial area. The potential route for connecting a project at the alternative site to the grid is short and direct compared to the proposal for Mission Rock. It mostly follows an existing utility corridor to connect at the Ormond Beach Substation approximately three-quarter mile south of the site. The site is a brownfield in an industrial area of Oxnard.

If construction and operation of the Ormond Beach Area Off-site Alternative was feasible, this alternative could potentially satisfy all of the project objectives.

Potential Feasibility Issues

The Mission Rock project owner does not have control of the Ormond Beach Area Off-site Alternative site. Developing a project similar to Mission Rock at this site would require the applicant to negotiate a property purchase or lease agreement with the owner. Depending on the outcome of such a negotiation, project viability could be affected.

Constructing and operating a project similar to Mission Rock at this alternative site would require a new power plant design proposal for the site with plans and analyses for off-site utility connections.

However, compared to Mission Rock, potential connection scenarios for water, natural gas, and electrical transmission are considerably shorter under this alternative. Assuming capacity is available; Oxnard's recycled water system could supply water to the site from the transmission main that parallels E. Hueneme Road north of the site.

With the possible retirement of 1,500 MWs of generating capacity at the OBGS, connecting this off-site alternative to an existing 220-kV breaker position at the Ormond Beach Substation could allow the Ormond Beach Area Off-site Alternative to interconnect with the grid at the substation without causing downstream impacts on the transmission grid. However, the proponent for a project at this site would have to apply to the California ISO interconnection process, and a system impact study would be required to assess potential effects on the grid.

This interconnection scenario would require a much shorter transmission line compared to Mission Rock, but it would require additional planning and analysis relating to ROW acquisition for the new transmission line. The work to gain site control of the Ormond Beach Area Off-site Alternative, conduct site planning and analysis, and plan its grid interconnection would delay the project and could affect its viability as an alternative.

Environmental Analysis

Alternatives Table 4 presents a summary comparison of impacts of Mission Rock to the same or similar potential impacts of the Ormond Beach Area Off-site Alternative. Comparative discussions for each environmental topic area follow the table.

Alternatives Table 4
Summary Comparison of Impacts of Mission Rock to the Ormond Beach Area Off-site Alternative

Environmental Effect	Mission Rock	Ormond Beach Area Off-site Alternative
Agriculture, Forestry Resources, and Land Use		
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (maps prepared pursuant to the Farmland Mapping and Monitoring Program) to non-agricultural use	LS	Less than Mission Rock (LS)
Conflict with existing zoning for agricultural use, or a Williamson Act contract	LS	Less than Mission Rock (LS)
Conflict with existing zoning or cause rezoning of forest land, timberland, or timberland that is zoned Timberland Production	—	—
Cause loss or conversion of forest land to non-forest use	—	—
Cause a change in the environment that could result in conversion of Farmland to non-agricultural use or forest land to non-forest use	LS	Less than Mission Rock (LS)
Physically divide an established community	—	—
Conflict with any applicable habitat conservation plan or natural community conservation plan	—	—
Conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	LS	Greater than Mission Rock (LS)
Air Quality		
Criteria Pollutants		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Similar to Mission Rock (SM)
Greenhouse Gas		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Similar to Mission Rock (SM)
Biological Resources		
Project construction impacts		
Impacts on riparian habitat (state waters)	SM	—
Impacts on special-status plants and wildlife (excluding nesting birds) on the site	—	—
Impacts on special-status plants and wildlife (excluding nesting birds) along the transmission line	—	—
Impacts of noise on nesting birds (non-listed species)	SM	Less than Mission Rock (PSM)
Impacts of noise on nesting birds (listed species)	SM	—
Impacts of lighting, storm water, and invasive weeds on biological resources	SM	Similar to Mission Rock (PSM)
Project operations impacts		
Impacts of noise on nesting birds (non-listed and listed species)	LS	—
Impacts of nitrogen deposition on biological resources	—	Greater than Mission Rock (PSM)

Alternatives Table 4
Summary Comparison of Impacts of Mission Rock to the Ormond Beach Area Off-site Alternative

Environmental Effect	Mission Rock	Ormond Beach Area Off-site Alternative
Impacts of transmission line electrocution on avian species (large raptors)	SM	Similar to Mission Rock (PSM)
Impacts of transmission lines/poles relating to the risk of collision for listed avian species	SM	Less than Mission Rock (PSM)
Cultural Resources		
Impacts on surficial archaeological and ethnographic resources	—	—
Impacts on buried archaeological resources	PSM	Similar to Mission Rock (PSM)
Impacts on built environment resources	SM	Less than Mission Rock (PSM)
Geology and Paleontology		
Risk of damage to paleontological resources	PSM	Similar to Mission Rock (PSM)
Potential impacts on geological or mineralogical resources	—	—
Risk of surface fault rupture	LS	Similar to Mission Rock (LS)
Risk of liquefaction, dynamic compaction, and lateral spread from strong seismic shaking	PSM	Similar to Mission Rock (PSM)
Risk of potential excessive settlement or expansion of soils causing an impact on structures	LS	Similar to Mission Rock (LS)
Hazardous Materials Management		
Potential for impacts on people off the site from an on-site release	PSM	Similar to Mission Rock (PSM)
Risk of accidental release of hazardous materials during transport	PSM	Similar to Mission Rock (PSM)
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	Less than Mission Rock (PSM)
Public Health		
Potential for on-site impacts on human health and the environment relating to toxic emissions	PSM	Similar to Mission Rock (PSM)
Potential for project area impacts from emissions of toxic air pollutants	PSM	Similar to Mission Rock (PSM)
Potential for impacts on human health and the environment relating to existing health status	PSM	Similar to Mission Rock (PSM)
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	Similar to Mission Rock (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	—	—
Adversely impact acceptable levels of service for law enforcement, parks and recreation, and schools	LS	Similar to Mission Rock (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees	B	Similar to Mission Rock (B)
Soil and Water Resources		

Alternatives Table 4
Summary Comparison of Impacts of Mission Rock to the Ormond Beach Area Off-site Alternative

Environmental Effect	Mission Rock	Ormond Beach Area Off-site Alternative
Construction-related impacts	PSM	Similar to Mission Rock (PSM)
Storm water impacts	PSM	Same as Mission Rock (PSM)
Flooding hazard	LS	—
Wastewater discharge impacts	SM	Similar to Mission Rock (SM)
Impacts on water quality	PSM	Similar to Mission Rock (PSM)
Impacts on water supply	—	—
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Similar to Mission Rock (PSM)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Similar to Mission Rock (PSM)
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than Mission Rock (PSM)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Similar to Mission Rock (LS)
Impacts on aircraft and pilot safety from thermal plumes	PSM	Greater than Mission Rock (PSM or PSU)
Impacts on navigation signals and aircraft traffic relating to location of exhaust stacks	Indeterminate	Less than or similar to Mission Rock (Indeterminate)
Impacts on navigation signals and aircraft traffic relating to location of transmission lines	Indeterminate	Less than or similar to Mission Rock (Indeterminate)
Potential for exhaust stacks to physically obstruct aircraft arrival/departure tracks	LS	Similar to Mission Rock (LS)
Visual Resources		
Substantial adverse effect on a scenic vista	—	—
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	SM	—
Substantially degrade the existing visual character or quality of the site and its surroundings	SM	Less than Mission Rock (PSM)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	SM	Similar to Mission Rock (PSM)
Waste Management		
Potential for on-site impacts on human health and the environment relating to potential waste discharges	PSM	Similar to Mission Rock (PSM)
Potential for disposal or diversion of project materials to cause impacts on existing waste disposal or diversion facilities	PSM	Similar to Mission Rock (PSM)
Potential for impacts on human health and the environment relating to past or present soil or water contamination	PSM	Similar to Mission Rock (PSM)

Alternatives Table 4
Summary Comparison of Impacts of Mission Rock to the Ormond Beach Area Off-site Alternative

Environmental Effect	Mission Rock	Ormond Beach Area Off-site Alternative
Worker Safety and Fire Protection		
Risks/hazards to on-site workers	PSM	Similar to Mission Rock (PSM)
Emergency response time	—	—
Risk of significant drawdown of emergency medical services	—	—

Agriculture, Forestry Resources, and Land Use

The transmission line and structure foundations for the Ormond Beach Area Off-site Alternative would cross farmland designated by the Farmland Mapping and Monitoring Program as Farmland of Statewide Importance, with a small portion designated Unique. Ventura County provides threshold criteria and standard methodologies for determining whether a project could have a significant effect on the environment. Based on significance thresholds for loss of Important Farmland (Prime/Statewide, Unique, or Local), this alternative would have a less-than-significant impact on farmland (Ventura County Planning Division 2011). For this alternative, a lesser amount of Important Farmland would be impacted as would occur under Mission Rock; therefore, this impact is considered **less than Mission Rock**. Like Mission Rock, the impact conclusion is less than significant.

This off-site alternative would not cause the loss of forest land, and no impact would occur, which is the same conclusion as for Mission Rock. No land affected by the proposed project or this alternative is zoned as forest land or Timberland Production, and **no impact** would occur.

The transmission line for this alternative is relatively short compared to Mission Rock. The route could potentially parallel a short segment of E. McWane Boulevard and the utility corridor to the Ormond Beach Substation. The Ormond Beach Area Off-site Alternative site is in an industrial area adjacent to open space land that is part of the Ormond Beach Restoration Study Area. There are no residences near the site, and the linears are relatively short compared to Mission Rock. Construction of this alternative would not physically divide an existing community. This alternative would have **no impact** relating to this significance threshold, which is the same conclusion as for Mission Rock.

The alternative site and linears are not located in an area covered by a habitat conservation plan or natural community conservation plan. This alternative would have **no impact** on a habitat conservation plan or natural community conservation plan, which is the same conclusion as for Mission Rock.

As discussed above, with a general plan amendment to change the site's land use designation, the Ormond Beach Area Off-site Alternative could potentially be constructed and operated to be consistent with applicable land use LORS. Staff assumes that mitigation measures could reduce significant environmental impacts to less-than-significant levels. Therefore, with implementation of project and site design features, and mitigation measures imposed to reduce impacts to less than significant, staff concludes that conflicts with land use LORS could be resolved. However, the probable requirement for a general plan amendment to allow development of a project similar to Mission Rock on the alternative site leads staff to conclude that the impact is **greater than Mission Rock**. Like Mission Rock, the impact conclusion is less than significant.

Air Quality

The Ormond Beach Area Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative are located within the jurisdiction of the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality (attainment status of criteria pollutants) is the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

Under the Ormond Beach Area Off-site Alternative, approximately 275 MWs of natural gas-fired generation would be constructed and operated at the alternative site. It is expected that construction related air quality and greenhouse gas impacts for the Ormond Beach Area Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, and numbers and types of equipment used would be similar for the construction at both sites. The Ormond Beach Area Off-site Alternative is located in less complex terrain compared to the Mission Rock site, which could result in lower operating impacts, but staff does not expect there to be significant differences between the two sites. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of similar mitigation measures that would be recommended under the proposed project.

Biological Resources

Staff analyzed the Ormond Beach Area Off-site Alternative using available data sets, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), results of literature reviews, and aerial photographs.

The southeast portion of this off-site alternative was previously developed with industrial facilities. The entire site has been completely graded and is being used for parking of new automobiles on a graveled surface.

An unnamed drainage canal occurs approximately one-half mile west of the site, which drains to the Ormond Beach Wetlands southwest of the alternative site. Critical habitat for the western snowy plover, a federally-threatened bird, is located approximately 1 mile south of the site, along the coastal beaches and dunes.

The Ormond Beach area presents a significant wetland restoration opportunity in the region, and it has been prioritized by a number of agencies for conservation and restoration. Over 1,500 acres of habitat adjacent to this alternative site are currently being restored and others are planned for restoration (NRG 2015) (Aspen Environmental Group 2009). In general, the area supports a large number of special-status plant and wildlife species, and the area has the opportunity to be expanded. The study area for restoration includes a maximum of approximately 1,750 acres, including a large property bordering the Ormond Beach Area Off-site Alternative to the south that is owned by the State Coastal Conservancy and The Nature Conservancy. **Alternatives Figure 15** shows the restoration study area.

Project Construction Impacts

The site is graded and devoid of vegetation. The general character of the area surrounding the site is either developed or in agricultural use. There is no drainage on the site or riparian habitat present; therefore, **no impacts** on riparian habitat would occur. There is very low or no potential for special-status plant species and special-status wildlife species (excluding nesting birds) to be found on the site or on developed and agricultural lands immediately adjacent to the site or along this alternative's transmission line route. Staff concludes that this alternative would probably cause **no impacts** on these resources.

Land uses near the Ormond Beach Area Off-site Alternative are mostly agricultural and developed or vacant disturbed land (similar to the Del Norte/Fifth Street Off-site Alternative), and staff considers the surrounding areas to have limited nesting potential for birds. Common species that may nest in neighboring trees or buildings are acclimated to noises of human activities. Impacts on nesting birds during project construction are expected to be **less than Mission Rock**; mitigation measures would reduce potentially significant impacts to less than significant.

Construction of Mission Rock would create noise levels that would disturb the least Bell's vireo, a state and federally listed endangered species, breeding in adjacent riparian habitat. Under the Ormond Beach Area Off-site Alternative, this impact would not occur because there is no riparian habitat and the nearest suitable nesting habitat is over 6 miles away along the Santa Clara River. Therefore, there are **no impacts** from construction noise to least Bell's vireo with this alternative.

The timeline and equipment that would be used to construct this alternative would be similar to Mission Rock. General construction impacts on biological resources such as lighting, storm water discharge, and the potential spreading of invasive weeds are expected to occur regardless of the particular site. Although the site is adjacent to the Ormond Beach Restoration Study Area, the lands immediately abutting the Ormond Beach Area Off-site Alternative currently are either developed or agricultural and are therefore not as sensitive as the riparian habitat to the west of Mission Rock. Impacts

relating to construction are considered **similar to Mission Rock**. Mitigation measures would reduce potentially significant impacts to less than significant.

Project Operations Impacts

Impacts from operational noise at Mission Rock are expected to be less than significant, requiring no noise mitigation. At the Ormond Beach Area Off-site Alternative, there are no known on-site sensitive habitats or species, nor known off-site sensitive habitats or species. There is no known least Bell's vireo habitat within audible range of this alternative site; therefore, **no impacts** from operational noise would occur under this alternative.

There are no impacts from Mission Rock relating to nitrogen deposition. Staff's review of Google Earth imagery indicates potential dune habitat approximately one-quarter mile west of the Ormond Beach Area Off-site Alternative. Staff assumes that this off-site alternative would have the same operating profile as Mission Rock. Building a power plant like Mission Rock at this site would have potentially significant impacts from nitrogen deposition. Because this off-site alternative is relatively close to sensitive habitat, the potential for nitrogen deposition to impact sensitive habitat would be **greater than Mission Rock**. Mitigation measures would reduce potential impacts to less than significant through emission reduction credits, which would offset emissions for the entire region, ensuring that emissions overall continue to decrease.

This alternative would require installing a transmission line to connect to the Ormond Beach Substation approximately 1 mile south of the site. The new transmission line could present an electrocution hazard to large raptors if not constructed according to the Avian Power Line Interaction Committee guidelines to protect raptors (Avian Power Line Interaction Committee 2012). The Mission Rock site would also require construction of power lines using the same guidelines to fully mitigate potentially significant impacts; therefore, the Ormond Beach Area Off-site Alternative would have impacts from transmission line electrocution of avian species **similar to Mission Rock**. In addition, the impacts from transmission line/pole collisions for the proposed project would impact listed species (southwestern willow flycatcher and willow flycatcher) during nocturnal migration. These impacts are considered significant. Mission Rock has a 6.6-mile-long transmission line while the Ormond Beach Area Off-site Alternative is less than a mile long; therefore, potential impacts on listed avian species from the installation of a transmission line would be **less than Mission Rock** due to the corresponding decrease in the potential risk for collision.

Cultural Resources

The Ormond Beach Area Off-site Alternative is devoid of buildings. Industrial facilities of the Reichhold Chemical Company/Oxychem were on the site until sometime around 2009–2011, when they were removed. A segment of rail line bordering the east side of the site is a spur line of the Ventura County Railway. The southern end of the railroad spur line enters the alternative site and breaks into two separate tracks, terminating on the southwest portion of the site at two spur stops. As stated above, site visits in 2016 show that the site was graded and surfaced to facilitate its use for new vehicle parking.

Staff observations from Arcturus Avenue noted the terminus of the spur at the two spur stops. Staff suspects the track is intact but partially covered by gravel. The railroad spur is actively used north of the alternative site, adjacent to an automobile distribution center.

A record-search at the South Central Coastal Information Center (SCCIC) in November 2016 did not identify any ethnographic or archaeological cultural resources at the alternative site, but two sites were identified within 1 mile of the site. The area has been subject to two cultural resource surveys, and an additional 31 surveys have occurred within a mile of the site.

Staff walked the boundaries of the alternative site in November 2016 in an attempt to identify potential areas that could be used by contemporary Native American groups for hunting or gathering activities. The entire site is denuded of vegetation, and the surrounding industrial and agricultural uses of the area would likely preclude any hunting or gathering in the area.

Staff investigated eight built environment resources that were identified by use of historical maps and aerial imagery, staff research, and the results of the literature search conducted at the SCCIC. Staff conducted a windshield survey of the resources on November 10, 2016, as part of the Puente Power Project alternatives analysis. **Alternatives Table 5** lists the eight built environment resources 45 years old or older within the one-half mile radius. Of these resources, only SMD-3, the Ventura County Railway, is considered a historical resource for the purposes of CEQA (see **Alternatives Figure 16**).

The Ventura County Railway (VCRR, SMD-3) (**Alternatives Table 5**) is listed as a landmark on the Ventura County Historical Landmarks and Points of Interest. The VCRR is also listed on the California Register of Historical Resources (CRHR) and was found eligible for listing under Criterion A of the National Register of Historic Places (NRHP). The determination of eligibility was made by the State Historic Preservation Officer (SHPO) through a Section 106 consultation process for the Bureau of Reclamation's Calleguas Hueneme Outfall Replacement Project (BUR090416A). None of the information obtained by staff through the literature search or by other means has described those portions of the railway and its elements that are considered historical resources, character-defining features or contributing elements, nor has a period of significance been established in the known literature. Staff has not conducted a comprehensive survey and evaluation of the resource and its contributing elements.

The archaeological and ethnographic setting presented in **Cultural Resources Appendix A** of this staff assessment applies also to this alternative.

Alternatives Table 5
Previously Recorded Built Environment Resources within One-half Mile of the Ormond Beach Area Off-site Alternative Site

Reference Number	Description	Type	Address	Year Built	CRHR Eligible
SMD-1	Kaiser Aluminum & Chemical Corporation/Aluminum Precision Products	Manufacturing Complex	1001 East McWane Blvd.	1966	Unlikely
SMD-2	Arcturus Manufacturing Corporation	Manufacturing Complex	6001 Arcturus Ave.	1964	Unlikely
SMD-3	Ventura County Railway	Railroad	Oxnard to Port Hueneme	1903–1905	Yes. CRHR Listed 2S2-A [1]
SMD-4	Oxnard Industrial Drain/ Ormond	Water Conveyance	Oxnard to Ormond Beach	1951 or earlier [2]	Unlikely
SMD-5	Lagoon Waterway	Dirt Road	Ormond Beach area	1904 or earlier	Unlikely
SMD-6	Jeep Trail	Manufacturing Complex: Removed between 2009 and 2011	5980 Arcturus Avenue	1967	No
SMD-7	Former Reichhold Chemical Company/Oxychem	Bridge	Crosses Oxnard Industrial Drain at Hueneme Road	1969	Unlikely
SMD-8	Hueneme Road Bridge	Trucking Facility/ Quonset Hut	320 East Hueneme Road	Unknown	Unlikely

[1] California Historical Resources Status Code 2S2-A: Eligible for National Register of Historic Places (NRHP) by Consensus through Section 106 Process. Listed on CRHR. Eligible for NRHP under Criterion A: Associated with events that have made a significant contribution to the broad patterns of our history.
[2] U.S. Geological Survey Topographic Map Oxnard, California Quadrangle.7.5. 1951.

Impacts on Surficial Archaeological and Ethnographic Resources

A review of historical topographic maps, archival Google Earth imagery, and maps of ethnographic villages did not reveal any surficial archaeological resources or ethnographic resources at the Ormond Beach Area Off-site Alternative. Additionally, a record search at the SCCIC did not identify any previously recorded cultural resources at the alternative site, although the site has been surveyed for cultural resources at least twice. Due to previous intensive development and disturbance at the alternative site, as well as the lack of recorded cultural resources despite two surveys, staff predicts that surficial archaeological resources or ethnographic resources are unlikely to be found at this alternative site. Staff concludes that, like Mission Rock, **no impact**s on such resources would occur.

Impacts on Buried Archaeological Resources

The Ormond Beach Area Off-site Alternative is located on the large coastal alluvial fan of the Oxnard Plain. These deposits are classified as Qhff, Holocene alluvial fan deposits, and are of the appropriate age and depositional nature to preserve archaeological resources. Previous development and disturbance at the alternative site suggests that the potential for impacts on buried archaeological resources is low, albeit possible. Therefore, impacts on buried archaeological resources would be **similar to Mission Rock** where impacts on buried cultural resources are also possible but would be reduced to a less-than-significant level through a comprehensive cultural resources mitigation and monitoring plan.

Impacts on Built Environment Resources

The Ventura County Railway is a locally listed historical landmark (#141-Ventura County) and is listed on the CRHR. In 2009, it was determined eligible for listing under Criterion A of the NRHP. The determination of eligibility was made by the SHPO through a Section 106 consultation process for the Bureau of Reclamation's Calleguas Hueneme Outfall Replacement Project. It is not clear whether spur lines from the Ventura County Railway are considered contributing elements to the listed historical resource. Therefore, staff must presume the spur line is a contributing element and a historical resource for the purposes of CEQA.

Construction of a power plant like Mission Rock on this alternative site has the potential to impact the spur line. Avoidance of the resource through site design may be able to mitigate a potential significant impact to less than significant. While this alternative could impact the rail spur, the proposed project would likely cause a far greater number of impacts on built environment cultural resources; therefore, the impact under this alternative is **less than Mission Rock**. (See the **Cultural Resources** section of this staff assessment for an assessment of impacts of the proposed project on the Santa Clara Valley Rural Historic District.) Mitigation measures would be recommended to avoid, minimize, or compensate for potential impacts under this alternative, which would likely reduce impacts on built-environment resources to less-than-significant levels.

Conclusion

Like Mission Rock, the Ormond Beach Area Off-site Alternative would cause no impacts on surficial archaeological or ethnographic resources, but could impact buried archaeological resources, **similar to Mission Rock**. Staff considers the spur line of the Ventura County Railway located on the site to be a potential historical resource which could be impacted by this alternative. Mitigation measures would likely reduce the impact to less than significant. While the impacts on built environment resources are similar in nature to the proposed project, the proposed project would impact significantly more resources in a variety of ways; therefore, the impact under this alternative is **less than Mission Rock**.

Geology and Paleontology

The Ormond Beach Area Off-site Alternative is located approximately 12 miles south-southwest (as the crow flies) of the proposed Mission Rock site. Topography of the site appears to be generally flat and underlain by sediments similar to the proposed Mission Rock site. Land uses in the site vicinity include a mix of industrial and agricultural uses. Ground disturbance activities similar to that required to construct Mission Rock would be required for this alternative.

This alternative would have a similar potential to encounter and damage buried paleontological resources. Although paleontological resources have limited potential to occur, if such resources were encountered during excavation, potential impacts could be significant. Implementation of a paleontological resources monitoring program, such as the one described in the **Geology and Paleontology** section of this staff assessment (see Conditions of Certification **PAL-1** through **PAL-8**), would be required

to reduce the severity of impacts to a less-than-significant level. Staff concludes that the relative severity of the potential impact under this alternative is **similar to Mission Rock**.

This alternative would have **no impacts** on mineralogical or geological resources because such resources are not present at the site.

There are no known active faults on the alternative site. Therefore, there is a less-than-significant fault rupture hazard, which is **similar to Mission Rock**.

This alternative would be subject to the same, very strong levels of earthquake-related ground shaking as Mission Rock. The Ormond Beach Area Off-site Alternative would also be subject to the same, or slightly greater, potential for soil failure caused by liquefaction and/or dynamic compaction compared to Mission Rock. These potential impacts would require implementation of Condition of Certification **GEO-1** to reduce potential impacts to less than significant, **similar to Mission Rock**.

This alternative would be subject to the same risk of potential excessive settlement or expansion of soils as Mission Rock. The potential impacts from these conditions are less than significant, **similar to Mission Rock**.

Hazardous Materials Management

The Ormond Beach Area Off-site Alternative would present a nearly identical hazardous materials risk profile as described for the Mission Rock site. Both would use natural gas as fuel and ammonia for selective-catalytic reduction of oxides of nitrogen in the combustion exhaust. Since the hazardous risk profiles are similar, this off-site alternative would present potentially significant impacts that are **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potentially significant impacts to less than significant.

Noise and Vibration

The nearest noise-sensitive land use to Mission Rock is two residences located approximately 1,125 feet east of the site. The nearest noise-sensitive land use to the Ormond Beach Area Off-site Alternative is the residential community located close to one-half mile northwest of the site, or approximately twice the distance of the proposed project to the nearest residence. Because of the reduced distance, noise and vibration impacts associated with this alternative would be **less than Mission Rock**. However, potential impacts relating to noise and vibration would be reduced to less than significant with implementation of mitigation measures similar to those recommended for Mission Rock.

Public Health

As noted in the **Public Health** section of this staff assessment, the public health LORS that are cited and discussed are intended to ensure that all emissions from construction and routine operations for the proposed project or this alternative would be controlled to ensure levels without significant health impacts in the project or alternative site area.

The Ormond Beach Area Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Both Mission Rock and this off-site alternative would be located within the jurisdiction of the same local air district, the VCAPCD. The existing regulations on toxic air emissions are the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

It is expected that construction-related air quality impacts for the Ormond Beach Area Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, numbers, and types of equipment used would be similar for the construction at both sites. The Ormond Beach Area Off-site Alternative is located in less complex terrain compared to the Mission Rock site, which could result in lower operating impacts, but staff does not expect there to be significant differences between the two sites regarding toxic air pollutant levels. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that toxic air emission levels for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of the same or similar mitigation measures that are recommended for the proposed project.

Socioeconomics

Staff assumes that a similar construction workforce would be required for the Ormond Beach Area Off-site Alternative and that the construction timeline from site preparation to commercial operation would take approximately 23 months to complete, similar to Mission Rock. This alternative is within the Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area, which has a large labor supply that would meet this alternative's construction and operations workforce needs. This alternative would have a less-than-significant impact relating to population influx, **similar to Mission Rock**.

This alternative site is a former industrial property, and construction of a project similar to Mission Rock at the site would not displace people or housing, or necessitate the need for replacement housing to be constructed elsewhere. Like Mission Rock, **no impact** would occur.

With the ample local workforce, there would be no substantial increases in demand for parks and recreation facilities, law enforcement services, or schools. Thus, this alternative would have less-than-significant impacts on these services and facilities, **similar to Mission Rock**.

Expenditures for equipment and labor necessary to construct and operate this alternative would be similar to those for Mission Rock. The estimated fiscal benefits would have a beneficial impact, **similar to Mission Rock**.

A control building and garage/warehouse building would need to be constructed. As school impact fees are imposed on new and reconstructed covered and enclosed commercial/industrial space, this alternative would require a condition of certification similar to **SOCIO-1**, which is recommended for Mission Rock, to ensure payment to the specific school district(s) in which the site is located and compliance with socioeconomics LORS.

Soil and Water Resources

The site for Ormond Beach Area Off-site Alternative is located in the city of Oxnard with access to Oxnard's potable water system and municipal wastewater system. Both the Mission Rock site and the alternative site are in the jurisdictional region of the Los Angeles Regional Water Quality Control Board (LARWQCB), but this off-site alternative is approximately one-half mile east of the ocean and roughly 7½ miles south of the Santa Clara River. This location is within the coastal watershed area (as identified by LARWQCB), which drains to the ocean, but is outside the Coastal Zone where land uses are governed by the Oxnard Local Coastal Program.

A utility corridor east of the site includes a 220/230-kV transmission line and a 36-inch natural gas pipeline. Connecting this alternative to the electric grid would require approximately three-quarter mile of overhead transmission line, and connecting to the natural gas supply would require approximately one-quarter mile of underground pipeline. A segment of Oxnard's recycled water transmission main system is approximately one-half mile north of the site, which staff assumes can supply the site via installation of a pipeline connection.

Construction-related Impacts

Staff assumes that the entire approximately 13½-acre site would require light grading for site preparation and construction laydown. Deeper excavation would occur for the power block foundation, in addition to foundations for new administration and warehouse/lab buildings, and pads for various ancillary facilities (water storage tanks, firewater pump, ammonia tanks, etc.). Trenching to install underground pipelines would take place on-site to connect to the underground linear facilities and extend off-site to connect to supplies of natural gas and recycled water.

Compared to the Mission Rock site, construction activities at the Ormond Beach Area Off-site Alternative site would result in much less earthwork because Mission Rock would use approximately 120,000 cubic feet of imported fill material to elevate the entire site above the Santa Clara River floodplain. However, construction activities for both sites are subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permits including California's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Impacts on water quality would be minimized through compliance with the Construction General Permit and other applicable NPDES permits. Required implementation of specific best management practices (BMPs) for erosion control and wastewater management, in addition to numeric action levels (NALs) to evaluate the effectiveness of BMPs, would achieve minimum water quality standards. Although the amount of earthwork for Mission Rock is considerable, compliance with the Construction General Permit would reduce potential impacts to less than significant. Similarly, construction activities at the alternative site are subject to the Construction General Permit, which would reduce impacts to less than significant, **similar to Mission Rock**.

Storm Water Impacts

Development at this alternative site would not impact the course of a stream or river. Although a site-specific drainage study is needed to properly evaluate the adequacy of on-site drainage management, a storm water collection system similar to that proposed at the 10-acre Mission Rock site could likely manage storm water at the Ormond Beach Area Off-site Alternative site. Also, Oxnard imposes the same water quality requirements for new development and redevelopment projects as does Ventura County, including the engineering calculations and analysis in accordance with Ventura County's technical guidance manual. To satisfy those requirements, it must be demonstrated that the post-construction storm water controls will function appropriately. Implementation of these requirements at the alternative site would reduce potential storm water impacts to less than significant, **same as Mission Rock**.

Flooding Hazard

The Ormond Beach Area Off-site Alternative site is located approximately one-half mile outside the Federal Emergency Management Agency (FEMA) 1 percent annual chance flood hazard (also referred to as the 100-year event floodplain), which includes both coastal flooding and riverine flooding from the Santa Clara River. The FEMA flood hazard map shows the 0.2 percent annual chance flood hazard (also referred as the 500-year event floodplain) encroaching into the northwest corner of the site and covering a total area of almost an acre. In comparison, proposed placement of infill material would elevate the Mission Rock site to remove it from the 100-year floodplain. While this would reduce the flooding potential at the Mission Rock site, the properties surrounding the site would be within the 100-year floodplain. Because this alternative site is located well outside the 100-year floodplain, and only a small portion lies in the 500-year floodplain, **no impact** would occur relating to a potential flooding hazard.

Wastewater Discharge Impacts

The proposed project and the Ormond Beach Area Off-site Alternative would each use recycled water with the same technology and the same generating capacity. Therefore, the quantity and quality of generated wastewater are expected to be the same at both sites.

This alternative site is serviced by Oxnard's municipal wastewater system, which is expected to accept sanitary waste. Generated process wastewater would also discharge to the municipal wastewater system, assuming these flows would meet water quality criteria acceptable to Oxnard. This is a reasonable assumption because Oxnard operates an offshore ocean outfall that allows discharges of secondary-treated effluent and brine waste. Because Oxnard's wastewater treatment plant is licensed and regulated under waste discharge requirements issued by the LARWQCB, impacts would be reduced to less than significant, **similar to Mission Rock**.

Impacts on Water Quality

Potential impacts on water quality under this off-site alternative would be less than Mission Rock mainly due to its greater relative distance to surface water resources. Potential impacts on groundwater would also be less because an underground septic system presumably would not be needed. Despite a lower potential to impact water quality, this alternative would need to comply with the same requirements imposed on Mission Rock such as a hazardous materials management program, spill control and prevention, and other measures to avoid or reduce the potential discharge of contaminants. With these requirements implemented, impacts on water quality would be **similar to Mission Rock**.

Impacts on Water Supply

The proposed project and the Ormond Beach Area Off-site Alternative would use the same technology with the same generating capacity; therefore, operational water use is expected to be the same for each. The use of recycled water instead of potable water at this alternative site would cause **no impacts** on the regional potable water supply, which is the same conclusion as for Mission Rock.

Traffic and Transportation

Construction Workforce Traffic

The existing traffic system in the vicinity of the Ormond Beach Area Off-site Alternative appears to be operating at an acceptable LOS. According to the *Ventura County Congestion Management Program*, traffic on State Route 1 in the vicinity of the alternative site moves relatively smoothly, meaning that construction traffic would not travel on an already congested area of the highway (Ventura County Transportation Commission 2009).

Notwithstanding the additional soil infill trips generated by Mission Rock, temporary construction-related impacts on LOS from this off-site alternative would be **similar to Mission Rock**. Staff reached this conclusion because the absence of truck traffic from soil infill trips for this alternative would not necessarily reduce the impact such that a lower level of mitigation measures would be required compared to Mission Rock. Temporary traffic impacts from construction of this alternative would be potentially significant but could be reduced to less than significant by implementing a traffic control plan and obtaining applicable encroachment permits for heavy loads.

Driver Safety

Construction vehicles exiting the Ormond Beach Area Off-site Alternative would likely turn right onto Arcturus Avenue to head north toward the freeway and urbanized areas. In this case, vehicles would not need to cross a lane of opposing traffic. Vehicles could also exit left onto eastbound E. McWane Boulevard, which would require crossing a lane of opposing westbound traffic. However, this opposing westbound traffic would be low volume and slow moving, as E. McWane Boulevard dead ends less than 1,000 feet west of the alternative site. The risk of a dangerous collision would be low under the Ormond Beach Area Off-site Alternative.

Under the proposed Mission Rock project, many construction vehicles would exit the site via Mission Rock Road and continue on Pinkerton Road before turning left on South Briggs Road. Once on South Briggs Road, construction vehicles need to either turn left onto the SR 126 eastbound ramp or turn right onto the SR 126 westbound ramp. These intersections are not signalized. The risk of a dangerous collision on South Briggs Road would be low due to the relatively low volume of traffic on this road. Therefore, driver safety impacts from the Ormond Beach Area Off-site Alternative would be **similar to Mission Rock**. However, the risk is considered potentially significant. Driver safety impacts from the Ormond Beach Area Off-site Alternative could be reduced to less than significant by requiring preparation and implementation of a traffic control plan.

Damage to Roads and Bridges

Construction of the Ormond Beach Area Off-site Alternative would require truck trips that could damage roads. Impacts would be potentially significant but could be reduced to less than significant with preparation and implementation of a traffic control plan, including a requirement to repair and restore damaged roads. Because Mission Rock would require additional soil infill truck trips associated with raising the site out of the flood zone, the potential for damage to roads from this off-site alternative would be **less than Mission Rock** and potentially significant.

Operations Traffic

The same number of operations workers (15 workers) and truck deliveries would be used for the Ormond Beach Area Off-site Alternative and the proposed project. The proposed project and this alternative would both add new project operations vehicle trips to the area. However, the number of operations workers and deliveries would be relatively small and would not generate significant impacts on traffic LOS. Due to the small number of operations workers and deliveries, impacts would be **similar to Mission Rock** and less than significant.

Potential Impact of Thermal Plumes on Aircraft and Pilot Safety

Like the proposed project, the Ormond Beach Area Off-site Alternative would generate high-velocity thermal plumes which could potentially pose hazards to aircraft up to approximately 1,490 feet above ground level (AGL). The potential hazard assumes worst-case conditions, such as during full operation of the power plant in cool weather conditions with calm winds.

Naval Base Ventura County (NBVC) Point Mugu, the nearest airport, is approximately 3 miles southeast of the Ormond Beach Area Off-site Alternative. In January 2017, the Department of the Navy (U.S. Navy) submitted a letter to the Energy Commission as a comment during the Puente Power Project (Puente) energy facility siting case. The letter described flight operations at Runways 9/27 and 3/21 and the U.S. Navy's concern regarding the potential for this alternative to cause thermal plume impacts on regular naval aircraft activity at NBVC Point Mugu. The letter included radar screen captures depicting a medium sized passenger aircraft on ascent (between 1,000 and 3,000 feet AGL) very near, if not directly over the Ormond Beach Area Off-site Alternative. Operations on the flight track depicted in the radar screen captures are said to occur at least 3 to 4 times per weekday (U.S. Navy 2017). Thermal plumes produced by the Ormond Beach Area Off-site Alternative would have a significant impact on regular aircraft operations at NBVC Point Mugu.

Aircraft from other airports in the region could potentially fly directly over the alternative site (e.g., aircraft using Oxnard Airport and Camarillo Airport, which are approximately 4 and 6 miles from the site, respectively).

Given the distances of these airports from the Ormond Beach Area Off-site Alternative, aircraft would likely overfly the site at high altitudes and would not be significantly affected by thermal plumes from a power plant at this location.

Thermal plumes produced by the Ormond Beach Area Off-site Alternative would have an impact on regular aircraft operations at NBVC Point Mugu. For this reason, potential thermal plume impacts on aircraft and pilot safety for this off-site alternative would be **greater than Mission Rock**, and the impact conclusion is potentially significant. A mitigation measure recommending a change in the regular naval operations at NBVC Point Mugu to avoid the site could reduce the potential impact to less than significant. However, the feasibility of such a mitigation measure is unknown. The potentially significant impact and potentially infeasible mitigation could create a potentially significant and unavoidable impact for the Ormond Beach Area Off-site Alternative. This mitigation strategy would ultimately require coordination between Energy Commission staff and U.S. Navy officials before the feasibility of such a mitigation measure could be determined.

Potential for Power Plant Structures to Impact Aircraft and Pilot Safety

Construction of a project like Mission Rock at the alternative site would include five, 60-foot-tall exhaust stacks, which would not penetrate the navigable airspace for Runway 9/27 or Runway 3/21 at the NBVC Point Mugu.

The Ormond Beach Area Off-site Alternative is close to 3 miles (approximately 15,000 feet) from the nearest runway (Runway 27) at the NBVC Point Mugu, setting the threshold for exceeding the imaginary slope of obstruction at the site at about 150 feet in height. The project proponent for a project at this site would need to file Form 7460-1, which is required if the height of the construction or alteration of a structure would exceed an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of the airport. In commenting on Puente, the U.S. Navy letter stated that a 188-foot-tall exhaust stack would likely be found by the Federal Aviation Administration (FAA) to not pose an obstruction hazard to NBVC Point Mugu operations (U.S. Navy 2017). Therefore, it is reasonable to conclude that five, 60-foot-tall exhaust stacks would also not pose an obstruction hazard.

The Mission Rock site is approximately 3½ miles southwest of the Santa Paula Airport. The proposed project's five, 60-foot-tall exhaust stacks would not penetrate the navigable airspace. The FAA provides a Notice of Criteria Tool used to determine whether a structure or project would trigger FAA review. (The applicable federal regulations are described above under the "Traffic and Transportation" analysis for the Petrochem Refinery Off-site Alternative.) Based on the applicant's results using this FAA tool, the proposed project includes structures which are "in proximity to a navigation facility and may impact the assurance of navigation signal reception." The FAA has requested the applicant submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, for the exhaust stacks and transmission structures in order to review Mission Rock for potential hazards on air navigation. Without a completed FAA review, the impacts of these structures cannot be fully analyzed for the proposed project.

Despite the full impact analysis of the exhaust stacks at the proposed Mission Rock site being contingent on an FAA determination, staff estimates that there would not be a greater potential for an impact to occur under the Ormond Beach Area Off-site Alternative, and the impact would be **less than or similar to Mission Rock**. Also, given comments from the U.S. Navy, the 60-foot-tall exhaust stacks would not pose a hazard to NBVC Point Mugu operations and would likely be determined to have a less-than-significant impact on air traffic navigational signals. Without an FAA review, the comparative impact conclusion is indeterminate.

The Ormond Beach Area Off-site Alternative is approximately 6 miles southwest of the Camarillo Airport and 4 miles southeast of the Oxnard Airport. These distances do not require FAA notification. The nearest runway at NBVC Point Mugu is located close to 3 miles southeast of this off-site alternative, which is within the minimum distance for notification of the FAA. Staff calculated that the threshold for FAA notification at the Ormond Beach Area Off-site Alternative would be a structure height of 150 feet. Most of the transmission structures would be below this threshold, but if one 156-foot-tall transmission structure was required (as under Mission Rock), it would exceed the height threshold. If that occurred, FAA notification and a subsequent FAA obstruction hazard review would be required.

The conceptual transmission line route for the Ormond Beach Area Off-site Alternative mostly follows the existing utility corridor along Edison Drive, which includes the Ormond Beach-Moorpark 220/230-kV transmission line. It is reasonable to assume that paralleling an existing utility ROW would not likely introduce a new significant impact on aviation safety. Therefore, staff determines that impacts of the transmission system for this off-site alternative in regards to aircraft and pilot safety would be **less than or similar to Mission Rock**; without an FAA review, the comparative impact conclusion is indeterminate. Despite the full impact analysis of the transmission systems for the proposed Mission Rock project and Ormond Beach Area Off-site Alternative being contingent on FAA determinations, staff estimates that there will not be a greater potential for impact under the Ormond Beach Area Off-site Alternative.

Aircraft piloted to arrive and depart from the Oxnard Airport are not known to fly over the Ormond Beach Area Off-site Alternative at low altitudes, and the exhaust stacks are not expected to cause a physical obstruction hazard for naval operations. **Similar to Mission Rock**, staff concludes that the exhaust stacks at the Ormond Beach Area Off-site Alternative would be unlikely to physically obstruct aircraft arrival/departure tracks, and the impact conclusion is less than significant.

Visual Resources

This subsection discusses the visual setting and estimates viewer concern for viewer groups in the area where the Ormond Beach Area Off-site Alternative is located. Comparative visual impacts of this alternative to Mission Rock follow the setting discussion.

Visual Setting, Viewer Concern, and Viewer Exposure

The landscape in the vicinity of this alternative is characterized by surrounding low-rise industrial businesses adjacent to agricultural fields and open space areas. The approximately 13½-acre Ormond Beach Area Off-site Alternative is an undeveloped and graded industrial site that is currently used for parking of new KIA vehicles. Open space and agricultural land west and south of the alternative site include properties that are part of the planned Ormond Beach Wetlands Restoration Project (**Alternatives Figure 15**). The Ormond Beach Generating Station (OBGS) south of the site is the most visually prominent feature in the area.

Alternatives Figure 17 shows the site looking northeast from Arcturus Avenue near its intersection with E. McWane Boulevard. Aluminum Precision Products, a metal fabrication business, is visible beyond the rows of parked automobiles. The high-voltage Southern California Edison (SCE) transmission line serving the OBGS parallels Edison Drive and is also visible in the background. **Alternatives Figure 18** provides an eastward view along E. McWane Boulevard from a viewpoint approximately one block west of Arcturus Avenue. The roads bordering the site are not major travel corridors either for recreationists or local residents, and no roads near the site are listed on Oxnard's inventory of scenic routes.

Visual quality of the light industrial area is *low to moderate*; visual quality of the extensive, flat agricultural and open space lands is *moderate*, lacking highly vivid features in areas away from the beach. Based on staff's observations during a site visit in April 2016, the area near this off-site alternative is at the southern edge of an industrial area that is somewhat removed from areas with higher public access and use. Viewer concern in the immediate vicinity of the site is estimated to be *low to moderate*.

The open space and agricultural areas immediately south of the site are part of the Ormond Beach Restoration Study Area and do not include publicly accessible recreational use areas. The nearest portion of Ormond Beach is a little over one-half mile south of this off-site alternative. **Alternatives Figure 19** shows the view south toward the beach and the OBGS from Arcturus Avenue. The existing OBGS dominates views along the beach. Public access to Ormond Beach is provided at the end of Perkins Road (1 mile northwest of the OBGS) and Arnold Road (close to 1 mile southeast of the OBGS). Ormond Beach is identified as an "undeveloped site" in the city's general plan (City of Oxnard 2006). Although viewer concern of visitors to the beach is expected to be *high*, current visitor numbers are estimated to be *low* due to limited public access.

The closest residential area to the Ormond Beach Area Off-site Alternative is the Villa Cesar Chavez development, approximately one-half mile northwest of the alternative site on the north side of E. Hueneme Road. Residents are expected to be highly sensitive to views in their community. **Alternatives Figure 20** provides a view south-southeast in the direction of the Ormond Beach Area Off-site Alternative. Buildings of the industrial and warehouse commercial businesses west of Arcturus Avenue partially block the view south from this viewpoint, although portions of the OBGS stacks are visible in the background. The signalized crossing of the Ventura County Railway at E. Hueneme Road is visible in the foreground.

In general, viewer concern for homeowners and other local residents is expected to be high for views near their homes. Therefore, viewer concern of the Villa Cesar Chavez residents is considered to be *high*. However, visual quality of the industrial area dominating the visual foreground is *low to moderate*, and viewer exposure to the alternative site is *low* from the Villa Cesar Chavez development because of the intervening industrial and commercial buildings. Residents would not be highly aware of a power plant like Mission Rock at this alternative site due to limited visibility from the residential area.

Visual Impacts

The Ormond Beach Area Off-site Alternative would introduce power plant structures at the site that would be visible from the surrounding area. Visually prominent elements would include five, 60-foot-tall exhaust stacks; 48- and 54-foot-tall water storage tanks (two storage tanks); and three, 65-foot-tall transformer dead end structures. Other visible features would include transmission line structures that would exit the site eastward to the utility corridor along Edison Drive.

The visual prominence of this alternative can be estimated by noting that the tallest project elements of a project like Mission Rock would be roughly one-quarter the heights of the nearby OBGS exhaust stacks, which are nearly 240 feet tall. Within the context of nearby industrial development, this alternative would be visible, but not strongly dominant.

Also, the off-site alternative would be set back from the beach and would not dominate views in the same way as the existing OBGS, which is prominently visible to viewers along the beach in the vicinity of the existing power plant.

There are no designated scenic vistas in the vicinity of the Ormond Beach Area Off-site Alternative (or the proposed project). This off-site alternative and the Mission Rock site are not near state-designated scenic highways, and there are no scenic resources on the sites that would be affected. Therefore, **no impacts** would occur that could affect a scenic vista or on-site scenic resources (including scenic resources within a state scenic highway).

The most notable scenic views in the vicinity of the alternative site include views from the beach and immediate vicinity toward the ocean. Because the site is a little over one-half mile inland, views from the beach and immediate vicinity toward the ocean would be largely unaffected by this alternative. Views of the level, low-lying agricultural and resource protection areas in the site vicinity may be considered moderately scenic due to their relatively intact natural character. However, such views from nearby public roadways would be minimally affected by the Ormond Beach Area Off-site Alternative, and these roadways presumably receive very low use by scenically sensitive recreational viewers. Even though the site is set back from the beach in an area with industrial uses and away from residential areas, this alternative could cause significant impacts on visual resources due to its location adjacent to an open space area and the absence of visually prominent structures on the existing alternative site.

Nighttime light and glare impacts could occur during construction and operation of this alternative. However, due to the relatively low height of power plant structures requiring lighting for safety and security, and with implementation of mitigation measures similar to those recommended for Mission Rock, potential light and glare impacts would be reduced to less than significant.

Comparative Impact Conclusions

Mission Rock would be sited within a low-rise industrial area similar to the area where this off-site alternative is located. It would be visible to the nearest sensitive viewers at similar distances of approximately one-half mile. Construction of a power plant like Mission Rock at this alternative site would introduce power plant structures on an underdeveloped site. Staff considers the overall visual change of the Ormond Beach Area Off-site Alternative to be *low to moderate*. However, the alternative site is adjacent to open space lands near the beach, and overall visual quality at the beach is considered *moderate* to *high*.

Because viewer concern of visitors to the beach is considered *high*, staff conservatively concludes that a power plant similar to Mission Rock at the alternative site has the potential to substantially degrade the existing visual character or quality of the site and its surroundings, as seen from the nearest beach area.

Although both the proposed project and the Ormond Beach Area Off-site Alternative would cause less-than-significant visual impacts with implementation of mitigation measures, Mission Rock's major visual effect would be caused by portions of the 6.6 miles of transmission line that would impact high-sensitivity visual and historical resources in that viewshed (i.e., the Santa Clara Valley Rural Historic District (SCVRHD) described in the **Cultural Resources** section of this staff assessment). Even with conditions of certification imposed to reduce visual impacts, the Mission Rock transmission line would remain highly visible in proximity to numerous visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse effects. (See the **Visual Resources** section of this staff assessment for a description of scenic resources associated with the SCVRHD.) No comparable scenic and historical resources or sensitivities are identified in this alternative's viewshed. Therefore, overall impacts on scenic resources under this alternative would be considerably **less than Mission Rock**.

In comparing the potential impact on visual character or quality, staff considered the relatively short length of the transmission line that could potentially connect this alternative to the electrical grid at the Ormond Beach Substation. Because of the significant visual impact of the Mission Rock project due to the high sensitivity of the transmission line viewshed, staff concludes that the potential for this alternative to substantially degrade the existing visual character or quality of the site and its surroundings is **less than Mission Rock**, and the impact conclusion is potentially significant. Nonetheless, visual impacts of the proposed project and this alternative would be reduced to less than significant with implementation of available and feasible mitigation measures to reduce visual contrast of project structures with the environment, including color treatment of power plant structures and with landscape screening and opaque fencing installed along the site periphery.

Staff concludes that the potential for this alternative to create a new source of substantial light or glare during the daytime or nighttime would be **similar to Mission Rock**, and the impact conclusion is potentially significant. Mitigation measures to minimize nighttime light pollution, ensure that light sources are not visible from areas beyond the site, and avoid reflected glare would reduce potential impacts to less than significant.

Waste Management

Waste management LORS are applied at the local and statewide levels to ensure safe handling and disposal of solid and hazardous waste from any facility.

Staff considers waste generation and the potential for contamination in assessing the environmental suitability of a project as proposed and at alternative sites. The waste impacts of concern are those occurring on-site and at disposal facilities and would be related to clearance, construction, and operational activities.

Similar to Mission Rock, the potential for on-site and off-site contamination are the primary factors for assessing the impacts from the Ormond Beach Area Off-site Alternative. Although this site is currently undeveloped, it was recently graded and surfaced with gravel or a similar material. The site has a history of industrial uses with evidence of contamination in the soil and groundwater that was remediated. As with Mission Rock and other sites, Energy Commission staff would require preparation, submittal, and implementation of a *Soil Management Plan* before any development-related clearance, construction, and operational activities could occur. The plan would ensure that any waste management impacts would be reduced to less-than-significant levels. Therefore, potential impacts from past or present site uses would be **similar to Mission Rock** and less than significant with mitigation measures imposed.

The waste management LORS that apply to the proposed project and other waste-generating projects would also apply to wastes generated under this off-site alternative. Therefore, the potential for impacts on human health and the environment from potential on-site waste discharges would be **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

The applicant would be required to comply with waste management mitigation measures and applicable LORS to reduce impacts on available disposal facilities while minimizing the impacts on human health and the environment.

This impact is **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potential impacts to less than significant.

Worker Safety and Fire Protection

The Ormond Beach Area Off-site Alternative would have the same worker safety and fire protection requirements as the proposed project. This alternative assumes construction and operation of a power plant that is the same as Mission Rock, although the site arrangement would be somewhat different. This off-site alternative would cause potentially significant impacts that are **similar to Mission Rock**. Mitigation measures like those recommended for Mission Rock would reduce potentially significant impacts to less than significant.

In conversations with the Ventura County Fire Department (VCFD), staff was informed that the VCFD is capable of responding to all emergency service needs (fire, rescue, hazardous materials spill, and medical) throughout the county in a timely manner, and no additional mitigation measures would be needed for a new power plant project in the county.

Because the VCFD has dispatch authority linked to all fire departments in the county, and not just within its own jurisdiction and its own response teams, drawdown of resources would be extremely rare. Therefore, staff concludes that like the proposed project, **no impacts** would occur relating to emergency response time or risk of significant drawdown of emergency medical services.

BATTERY ENERGY STORAGE ALTERNATIVE

Staff evaluated the comparative environmental impacts of developing a Battery Energy Storage Alternative in place of the proposed project at the Mission Rock site. Staff developed a conceptual site plan for this alternative to replace the five proposed combustion turbine generators at the site with as much battery charging and storage capacity as could fit in the proposed project footprint (see **Alternatives Figure 21**). The conceptual design is generally based on the battery energy storage system (BESS) planned by AES Southland Energy, LLC, at the Alamitos Generating Station site in Long Beach (City of Long Beach 2016).

This alternative would consist of a battery charging and storage system that would include two, 100-MW containment buildings for a total of 200 MWs of battery energy storage capacity at the site. Staff assumes that under this alternative, each 100-MW charging and storage unit would be able to provide 4 hours (total of 800 MW hours) of battery energy storage. This assumption is based on at least one published energy technology source listing facts about the BESS project in Long Beach (Greentech Media 2014).

Each of the battery containment buildings would cover approximately 50,000 square feet and stand approximately 50 feet tall, with two battery storage levels separated by a mezzanine level. The exterior of the buildings would be constructed primarily of precast concrete panels.

Air handling equipment would be located on the mezzanine for circulating cooling air to offset the approximate 10 percent process heat gain. Battery storage and charging modules would be located on the first and third floors. A modular chilled water system would be housed in an approximately 7,000-square-foot building to provide cooling to the mezzanine air handlers in the two battery containment buildings.

Redundant chilled water pumps would be provided, consistent with plant reliability standards.

The battery charging and storage system under this alternative would store energy from the electric grid (generally when supplies are high and/or when prices are relatively low) and discharge electricity to the grid during periods of high demand. These operations

could be accomplished to the extent allowed to do so under an assumed contract to provide local resource adequacy services to SCE and the California ISO.[10]

Battery energy storage can provide reliability services, including frequency regulation, transmission congestion relief, electric supply reserve capacity, voltage support, and load shifting.[11] Battery storage can provide operational flexibility, having the capability to discharge electricity back to the grid virtually instantaneously.

Energy recovery from battery energy storage does not involve on-site combustion of fossil fuels, and this alternative would not require the on-site fuel system equipment that would support Mission Rock. Energy from the transmission grid would be used to charge the batteries. The (generation) sources of energy from the transmission grid would vary depending on the grid system's supply portfolio and the daily and seasonal time-profile of electricity demand across the western U.S., and thus would evolve over time. Potential generation sources would also depend on the contract provisions for the hours in the day when the units were allowed to charge the batteries and discharge electricity to the grid. As stated below under the "Air Quality" subsection for this alternative, the probable sources of energy used to recharge the batteries would tend towards surplus electricity (i.e., excess solar and wind generation). The Battery Energy Storage Alternative is included because staff anticipates that parties to this proceeding and the public will expect inclusion of an alternative that would avoid on-site use of fossil fuels for power generation.

This alternative would likely use minimal amounts of electricity and natural gas for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics. A SoCalGas high-pressure distribution line that parallels W. Telegraph Road includes a pipeline segment that terminates near the site. This alternative would likely require construction of a short natural gas pipeline (roughly 500 to 1,000 feet) to connect to the SoCalGas distribution system.

No process water would be produced by the batteries. All cooling water for this alternative would be recirculated in a closed system so that no evaporation would occur. Water consumption would be low, requiring tens of gallons for periodic maintenance of the cooling system. Staff assumes that potable water could be provided by the city of Santa Paula for sanitary uses, potable outlets, and maintenance uses. Similar to the proposed project, a control building, switchgear building, warehouse, fire water storage tank, and firewater pump house would be constructed on the site.

The Battery Energy Storage Alternative would require constructing an on-site power plant switchyard similar to the proposed project. Like Mission Rock, connecting this

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[10] A key project objective, discussed below, is to contribute to meeting the local capacity requirement (LCR) need established by the California ISO for the Moorpark sub-area. Meeting this objective would require a contract allowing the California ISO to discharge the units during selected hours, and consequently, would require the units to be fully charged during those hours, thereby potentially constraining the hours when they can be recharged.

[11] Permanent load shifting refers to the shifting of energy usage from one period of time to another on a recurring basis, often by storing energy produced during off-peak hours and using the energy during peak hours to support loads (CPUC 2013b).

alternative to the electrical grid would require installing transmission structures and a new, single-circuit, three-phase, 230-kV generator tie-line. The transmission line route and grid connection at the Santa Clara Substation is assumed to be the same as proposed for Mission Rock. (As discussed above, the applicant withdrew Mission Rock from the California ISO interconnection queue Cluster 9.)

Staff assumes that construction and commencement of commercial operation would be phased over an approximately 2-year period. Temporary construction facilities would include the 2.89-acre parking and laydown area immediately north of the Mission Rock site.

The long-term operational workforce is estimated to require no more than four to five full-time staff for maintenance (8 hours per day, 40 hours per week). Additional contracted staff could be needed during forced and scheduled outage times. The mezzanine level in each of the two containment buildings would include small administrative/office areas and restroom facilities for staff. Like the proposed project, sanitary wastewater from the buildings would be routed to an on-site septic tank.

Potential to Attain the Project Objectives

The first project objective is to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology to meet the need for new local capacity in the Moorpark sub-area by 2021, and contribute to the integration of renewable energy resources into the electric power grid. Consistent with the first project objective, the underlying purpose of Mission Rock is to meet the local capacity requirement (LCR) need in the Moorpark sub-area by 2021.

The Puente Power Project (Puente) is a 262-MW natural gas-fired simple-cycle peaking facility proposed for construction and operation at the Mandalay Generating Station in Oxnard. The Puente siting case is undergoing review by the Energy Commission (docket number 15-AFC-01). In June 2017, the Committee conducting the Puente proceedings issued an Order that included acceptance of an offer from the California ISO to conduct a “special study” on local capacity alternatives to Puente (Energy Commission 2017). In August 2017, the California ISO fulfilled its offer by submitting the *Moorpark Sub-area Local Capacity Alternative Study* to the Energy Commission (California ISO 2017b). Energy Commission staff considered the study to be a potential resource for assessing whether the full Battery Energy Storage Alternative being evaluated for Mission Rock could meet the underlying project purpose.

The special study quantifies amounts of preferred resources, energy storage, and/or *reactive power devices* that would be necessary to meet the LCR need in the Moorpark sub-area absent Puente [or absent Mission Rock].[12] The study defines three scenarios, each starting with a common set of 135 MWs of incremental distributed resources that were developed through California ISO discussions with SCE staff. A list of resources and assumptions required for the three scenarios follows, which are in addition to the common set of incremental distributed resources (California ISO 2017b):

[12] Reactive power is necessary to support system voltage. A synchronous condenser is an example of a reactive power device.

- Scenario 1 – Battery Energy Storage (assumes continued operation of the 54-MW Ellwood Generating Station in Goleta)
    - 125 MWs of batteries with 9 hours of continuous discharge capability
    - 80 MWs of 4-hour demand response (DR)
    - 25 MWs of photovoltaics (PV) supported by batteries with 2.5 hours of continuous discharge capability (in addition to 239 MWs of behind-the-meter (BTM) PV included in the Energy Commission demand forecast)
    - 30 MWs of slow response, 6-hour DR supported by 30 minutes of battery energy storage
- Scenario 2 – Reactive Power Support (Mvar) (assumes continued operation of the Ellwood Generating Station)
    - 240-Mvar reactive power device
    - 80 MWs of 4-hour DR
    - 25 MWs of PV supported by batteries with 2.5 hours of continuous discharge capability (in addition to 239 MWs of BTM PV included in the Energy Commission demand forecast)
    - 30 MWs of slow response, 6-hour DR supported by 30 minutes of battery energy storage
- Scenario 3 – Battery Energy Storage (assumes retirement of the Ellwood Generating Station)
    - 240 MWs battery energy storage (includes some 5-hour, some 9-hour, and some 10-hour continuous discharge capability)
    - 80 MWs of 4-hour DR
    - 25 MWs of PV supported by batteries with 2.5 hours of continuous discharge capability (in addition to 239 MWs of BTM PV included in the Energy Commission demand forecast
    - 30 MWs of slow response, 6-hour DR supported by 30 minutes of battery energy storage

The California ISO special study identifies a projected local capacity deficiency of 264 MWs in the Moorpark sub-area by 2022 (California ISO 2017b). In approving the Puente contract (D.16-05-050), it is clear that the California Public Utilities Commission (CPUC) concluded that 262 MWs of natural gas-fired generation would contribute to ensuring local reliability. It is also true that Mission Rock would accomplish that goal.

Staff acknowledges that the configuration of batteries in staff's alternative does not appear to match the alternative resource scenarios evaluated by the California ISO to meet the Moorpark sub-area LCR.

However, staff discusses its 200-MW battery energy storage configuration as a way to provide a relative comparison of environmental impacts of a battery-based alternative to the proposed project.

Staff's Battery Energy Storage Alternative could contribute to meeting the LCR need (i.e., the underlying project purpose) and would reduce some environmental impacts associated with a natural gas-fired project. A BESS that would fully meet the LCR need, which staff is not responsible for or capable of designing, would not reverse the conclusions in the comparative analyses of impacts for this alternative, but could change the relative impact comparisons. For example, impacts on visual resources would require analyzing the height and massing of structures containing the batteries in a proposal for such a project.

The second project objective is to develop a 275-MW, natural gas-fired, simple-cycle generating facility. The Battery Energy Storage Alternative would not satisfy this objective.

The last two objectives address siting the project as near as possible to an SCE substation with available transmission capacity to serve the Moorpark sub-area and reusing a brownfield site in an industrial area. This alternative would be located at the Mission Rock site with the same grid connection point as the proposed project. If construction and operation of the Battery Energy Storage Alternative was feasible, this alternative could potentially satisfy these two project objectives. However, the applicant withdrew Mission Rock from the prior California ISO interconnection queue, and staff is now unable to determine whether any downstream facilities would be required for an interconnection at the Santa Clara substation for the proposed project or this alternative. The new Phase I interconnection study for Mission Rock should be available the first quarter of 2018.

Potential Feasibility Issues

Staff assumes that developing a full battery energy storage project at the Mission Rock site is technologically feasible and that the applicant has the ability to plan and build the facility. Constructing and operating the Battery Energy Storage Alternative at the Mission Rock site would require a new project design proposal and environmental analysis and permitting by the local jurisdiction. This work would delay the project, which could affect its viability as an alternative.

Although the California ISO special study determined that each scenario evaluated in the study could meet the forecasted peak load in the Moorpark sub-area, it does not address the timing or feasibility of procuring the alternative resource portfolios. The common set of 135 MWs of incremental distributed resources included for each scenario are likely considered by SCE to be achievable for the area in the near term; however, these incremental distributed resources are not sufficient alone to meet the LCR need in the Moorpark sub-area.[13]

[13] It is worth noting that the Energy Commission does not have the authority to procure and oversee deployment of the resources identified in the special study. For example, the CPUC quantifies

Staff has not performed an assessment of the cost of developing and operating an all Battery Energy Storage Alternative, or how the costs of meeting local capacity requirements with battery energy storage would compare to doing so with Mission Rock or other natural gas-fired generation. Staff does not have access to information regarding bids to provide multi-hour storage in recent utility requests for offers (RFOs), nor to the performance requirements and operating constraints imposed on multi-hour storage that would meet local capacity requirements. To the extent that providing local resource adequacy imposes costs and constraints on multi-hour storage facility development and operation that are not imposed on similar facilities providing system resource adequacy, recent bids into utility RFOs to meet storage targets may not reflect the costs associated with providing local resource adequacy.

Environmental Analysis

Alternatives Table 6 presents a summary comparison of impacts of Mission Rock to the same or similar potential-impacts of the Battery Energy Storage Alternative. The analysis below is focused on potential environmental effects that would be different under this alternative compared to Mission Rock.

This alternative does not require new analysis, changes to conclusions, or new or revised mitigation measures for several environmental topic areas. For the following topic areas, no comparative analysis of impacts is necessary:

- Agriculture, Forestry Resources, and Land Use
- Biological Resources
- Cultural Resources
- Geology and Paleontology
- Public Health
- Waste Management

For other potential environmental effects, summary discussions are provided below comparing the impacts of the Battery Energy Storage Alternative to the proposed project.

procurement of demand-side resources to meet local reliability, and the state's investor owned utilities (e.g., SCE) manage DR programs.

Alternatives Table 6
Summary Comparison of Impacts of Mission Rock to the Battery Energy Storage Alternative

Environmental Effect	Mission Rock	Battery Energy Storage Alternative
Air Quality		
Criteria Pollutants		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Less than or similar to Mission Rock (SM)
Greenhouse Gas		
Construction-related emissions	SM	Similar to Mission Rock (SM)
Project operations emissions	SM	Less than Mission Rock (SM)
Hazardous Materials Management		
Potential for impacts on people off the site due to on-site release	PSM	Similar to Mission Rock (PSM)
Risk of accidental release of hazardous materials during transport	PSM	Similar to Mission Rock (PSM)
Noise and Vibration		
Potential noise impacts at noise-sensitive locations	PSM	Less than Mission Rock (PSM)
Socioeconomics		
Induce substantial population growth in an area, either directly or indirectly	LS	Similar to Mission Rock (LS)
Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere	—	—
Adversely impact acceptable levels of service for law enforcement, parks and recreation, public libraries, and schools	LS	Similar to Mission Rock (LS)
Increased property taxes, construction and operation employment income, and increased state and local taxes and fees	B	Indeterminate (B)
Soil and Water Resources		
Construction-related impacts	PSM	Same as Mission Rock (PSM)
Storm water impacts	PSM	Similar to Mission Rock (PSM)
Flooding hazard	LS	Same as Mission Rock (LS)
Wastewater discharge impacts	SM	Less than Mission Rock (PSM)
Impacts on water quality	PSM	Less than Mission Rock (PSM)
Impacts on water supply	—	—
Traffic and Transportation		
Potential impacts from increased construction workforce traffic that is substantial compared to the existing traffic load and capacity of the street system	PSM	Less than or similar to Mission Rock (PSM)
Potential for increased workforce traffic to cause driver safety impacts during project demolition and/or construction	PSM	Similar to Mission Rock (PSM)

Alternatives Table 6
Summary Comparison of Impacts of Mission Rock to the Battery Energy Storage Alternative

Environmental Effect	Mission Rock	Battery Energy Storage Alternative
Potential for increased workforce traffic to damage roads and bridges during project demolition and/or construction	PSM	Less than or similar to Mission Rock (PSM)
Potential impacts from increased traffic during project operation (i.e., post-construction traffic) that is substantial compared to the existing traffic load and capacity of the street system	LS	Similar to Mission Rock (LS)
Impacts on aircraft and pilot safety from thermal plumes	PSM	—
Impacts on navigation signals and aircraft traffic relating to location of exhaust stacks (Mission Rock) or battery storage containment buildings	Indeterminate	Similar to Mission Rock (Indeterminate)
Impacts on navigation signals and aircraft traffic relating to location of transmission lines	Indeterminate	Same as Mission Rock (Indeterminate)
Potential for exhaust stacks (Mission Rock) or battery storage containment buildings to physically obstruct aircraft arrival/departure tracks	LS	Similar to Mission Rock (LS)
Visual Resources		
Substantial adverse effect on a scenic vista	—	—
Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	SM	Same as Mission Rock (SM)
Substantially degrade the existing visual character or quality of the site and its surroundings	SM	Similar to Mission Rock (PSM)
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	PSM	Similar to Mission Rock (PSM)
Worker Safety and Fire Protection		
Risks/hazards to on-site workers	PSM	Similar to Mission Rock (PSM)
Emergency response time	—	—
Risk of significant drawdown of emergency medical services	—	—

Air Quality

The 200-MW Battery Energy Storage Alternative would provide 4 hours of battery energy storage.

It is expected that construction-related air quality and greenhouse gas impacts would be **similar to Mission Rock** because the duration of construction activities, and numbers and types of equipment used would be similar for construction of the Battery Energy Storage Alternative compared to Mission Rock.

Operations-related impacts on air quality and greenhouse gas would depend on how the batteries are recharged. While it is likely that the batteries would be recharged with surplus, or over-generation, electricity, off-peak electricity, or least-cost electricity, it is not required or guaranteed that recharging would occur only under these scenarios.

In some cases the batteries could be recharged outside those scenarios in order to be fully charged and available for the next expected dispatch. In all cases, there would be underlying criteria and greenhouse gas emissions resulting from the recharging electricity, varying by the source of electricity used.

This alternative would likely avoid air quality and greenhouse gas impacts resulting directly from battery operation, as there would likely be no on-site air emissions[14] associated with operation of the batteries. Given that the likely sources of energy used to recharge the batteries would tend towards surplus electricity (i.e., excess solar and wind generation), staff concludes that the greenhouse gas impact would be **less than Mission Rock** for this alternative. This conclusion is based on the assumption that greenhouse gas emissions are typically evaluated on a total emissions basis per year. Overall, there would likely be fewer emissions associated with recharging the batteries under this alternative compared to operation of Mission Rock. However, there could still be times when emissions would be generated during battery recharging, specifically when the batteries were recharged by fossil fuel sources. Criteria pollutant impacts are analyzed by comparing ground level concentrations of criteria pollutants emitted by a facility to ambient air quality standards. There are short-term (1-hour and 24-hour) standards and long-term (annual) standards. Although the overall, annual emissions generated by sources used to recharge the batteries would likely be less than the emissions that would be generated by Mission Rock, the short-term (hourly and daily) emissions and associated impacts could be similar to Mission Rock during times the batteries were recharged by fossil fuel sources. Therefore, staff concludes the impacts would be **less than or similar to Mission Rock** for air quality criteria pollutants for this alternative (although the impacts would be spatially and temporally different than Mission Rock).

Hazardous Materials Management

The Battery Energy Storage Alternative would present a nearly identical hazardous materials risk profile as the proposed project, although the risks and hazards would be presented by different project components. Staff's assumptions for the hazardous materials profile holds true only if the conceptual design is generally based on the battery energy storage system proposed by AES Southland Energy at the Alamitos Generating Station in Long Beach, which uses a series of many individual Lithium-ion batteries.

The proposed project would use natural gas as fuel and aqueous ammonia for selective-catalytic reduction of oxides of nitrogen in the combustion exhaust, as well as various water treatment chemicals. The on-site Battery Energy Storage Alternative would not use natural gas or any ammonia or water treatment chemicals, thereby presenting a lower hazard profile from the presence of chemicals on the site. The proposed project would have 25 MWs of Lithium-ion battery energy storage while the Battery Energy Storage

[14] This neglects any potential ancillary equipment that may be used in facility operations resulting in air quality emissions. For example, if a diesel engine fire pump is used for fire protection, routine testing of the engine would result in air quality and greenhouse gas impacts.

Alternative would have 200 MWs of stored energy in Lithium-ion batteries, thus presenting a higher profile of risk and hazard due to the much greater number of batteries. Staff concludes that that the risk of fires and subsequent release of toxic fumes from a Lithium-ion battery fire due to the greater number of batteries cancels out the lower risk of upset posed by the elimination of ammonia and other chemicals. Therefore, the hazardous risk profile for this alternative is **similar to Mission Rock**. Implementation of mitigation measures like those recommended for Mission Rock would reduce impacts to less than significant.

Noise and Vibration

The construction equipment used for this alternative would be similar to Mission Rock. One notable exception would be pile driving that could be required to construct the proposed project's combustion turbine generators, but which might not be required to install the components of the Battery Energy Storage Alternative.

Operating equipment required under this alternative would generally be quieter than combustion turbine units due to several factors, such as fewer large mechanical and rotating components and absence of high-pressure fluids. Therefore, it would be expected that noise from the operation of this alternative would be **less than Mission Rock**.

Although noise impacts associated with construction and operation of this alternative would be less than the proposed project, mitigation measures would be required to reduce potential noise impacts to less-than-significant levels.

Socioeconomics

Staff has not determined the size of the construction workforce that would be required for this alternative; it could be similar to or somewhat less than Mission Rock. Staff considers it highly unlikely that the construction workforce for the Battery Energy Storage Alternative would be greater than Mission Rock. The total construction timeline would be similar to Mission Rock. The long-term operational workforce is estimated to be smaller, requiring no more than four to five full-time staff for maintenance (8 hours per day, 40 hours per week). This alternative is within the Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area, which has a large labor supply that would meet this alternative's construction and operations workforce needs. This alternative would have a less-than-significant impact relating to population influx, on a scale that is **similar to Mission Rock**.

This alternative would be located at the Mission Rock site. The site is currently used for recreational vehicle and boat storage. Adjacent land uses include an asphalt recycling plant, agriculture, an automobile dismantling and salvage facility, and an oil field operation support yard. This alternative would not displace people or housing, or necessitate the need for replacement housing to be constructed elsewhere. Like Mission Rock, **no impact** would occur.

With the ample local workforce, there would be no substantial increases in demand for parks and recreation facilities, law enforcement services, or schools. Thus, this alternative would have less-than-significant impacts on these services and facilities, **similar to Mission Rock**.

The comparative scale of expenditures for equipment and labor necessary to construct and operate this alternative is indeterminate for this alternative. Whatever the estimated expenditures of this alternative, it would generate fiscal benefits that would have a beneficial impact, although the relative benefit compared to Mission Rock is **indeterminate**.

Similar to Mission Rock, a control building and warehouse would be constructed on the site. As school impact fees are imposed on new and reconstructed covered and enclosed commercial/industrial space, this site would require condition of certification **SOCIO-1**, which is recommended for Mission Rock, to ensure payment to the Briggs Elementary School District and Santa Paula Unified School District and compliance with socioeconomics LORS.

Soil and Water Resources

Compared to Mission Rock, the Battery Energy Storage Alternative would have very similar impacts on soil and water resources, the exception being potential impacts relating to water quality and wastewater discharge. This alternative would include construction of many of the same auxiliary elements of the proposed project on the same 10-acre site, such as a control building, switchyard, switchgear building, warehouse, and on-site septic sewer system.

Impacts Relating to Flooding, Construction, and Storm Water Management

Staff assumes that the site would be elevated above the 100-year event floodplain by placing approximately 120,000 cubic feet of infill material, the same as for the proposed Mission Rock project. As a result, potential impacts relating to construction and flooding would be the **same as Mission Rock**. Although the post-construction results would appear very different, with the alternative's two very large containment buildings for batteries as opposed to Mission Rock's five large combustion turbine generators, both must meet the same water quality standards, and the system for storm water management would be very **similar to Mission Rock**.

Wastewater Discharge and Water Quality Impacts

The only notable difference in potential impacts under this alternative relates to the wastewater that would be produced. The amount of industrial wastewater would be considerably less under the Battery Energy Storage Alternative, consisting mainly of equipment wash-water and other maintenance activities. Wastewater would also be less likely to contain toxic or hazardous pollutants compared to Mission Rock. This alternative would not require the chemicals or toxic substances needed to operate Mission Rock (such as lubrication oil, hydraulic oil, laboratory reagents for water analysis, and chemicals for cleaning combustion turbines), and no industrial equipment (such as power blocks) would be exposed to rain water that could potentially cause runoff containing oil and suspended solids.

As a result, the Battery Energy Storage Alternative would have a relatively reduced potential to cause significant impacts relating to water quality and wastewater discharges.

Staff notes that this alternative would likely require some mitigation to ensure potential impacts of industrial wastewater are below levels of significance, and that Mission Rock would implement measures (conditions of certification and LORS compliance) that would reduce its potential impacts to less than significant. However, the Battery Energy Storage Alternative would result in much less industrial wastewater that is much less likely to contain toxic or hazardous pollutants. Therefore, staff concludes that potential water quality impacts of industrial wastewater discharges of this alternative would be **less than Mission Rock**.

Impacts on Water Supply

The amount of water required for the Battery Energy Storage Alternative would be less than what would be required for Mission Rock. No process water would be needed to charge or store energy in the battery system, other than water used to cool the air inside the two containment buildings. All cooling water for this alternative would be recirculated in a closed system so that no evaporation would occur. Water consumption would be low for this alternative, requiring tens of gallons for periodic maintenance of the cooling system. Mission Rock would use recycled water for industrial purposes. Potable water supplies would not be significantly impacted by this alternative or the proposed project. The proposed project and the Battery Energy Storage Alternative would have **no impacts** on water supply.

Traffic and Transportation

Construction Workforce Traffic

The total construction generated traffic for the Battery Energy Storage Alternative would be **less than or similar to Mission Rock**. Temporary traffic impacts from construction of this alternative would be potentially significant but could be reduced to less than significant by implementing a traffic control plan and obtaining applicable encroachment permits for heavy loads.

Driver Safety

Under the proposed Mission Rock project, many construction vehicles would exit the site via Mission Rock Road and continue on Pinkerton Road before turning left on South Briggs Road. Once on South Briggs Road, construction vehicles need to either turn left onto the SR 126 eastbound ramp or turn right onto the SR 126 westbound ramp. These intersections are not signalized. However, the risk of a dangerous collision on South Briggs Road would be low due to the relatively low volume of traffic on this road. Therefore, driver safety impacts from the Battery Energy Storage Alternative would be **similar to Mission Rock**. However, the risk could still be potentially significant. Driver safety impacts from the Battery Energy Storage Alternative could be reduced to less than significant by requiring preparation and implementation of a traffic control plan.

Damage to Roads and Bridges

Construction of the Battery Energy Storage Alternative would require truck trips that could damage roads. The total amount of construction generated traffic trips is expected to be less than or similar to the amount of the proposed Mission Rock project. Impacts would be potentially significant but could be reduced to less than significant with preparation and implementation of a traffic control plan, including a requirement to repair and restore damaged roads. The potential for damage to roads from this alternative would be **less than or similar to Mission Rock**.

Operations Traffic

Mission Rock would employ 15 operations workers. Mission Rock operation would require regular transportation of hazardous materials to the site (e.g., aqueous ammonia). The long-term operational workforce for the Battery Energy Storage Alternative is estimated to require no more than four to five full-time staff for maintenance (8 hours per day, 40 hours per week). Almost no truck traffic would occur relating to operations for this alternative. The Battery Energy Storage Alternative would require less operational workers than the proposed project and less truck traffic. Neither case would generate a significant impact on traffic LOS. Therefore, the Battery Energy Storage Alternative would be **similar to Mission Rock** and less than significant.

Potential Impact of Thermal Plumes on Aircraft and Pilot Safety

The technology utilized for the Battery Energy Storage Alternative would not generate thermal plumes, and **no impact** would occur under this alternative.

Potential for Power Plant Structures to Impact Aircraft and Pilot Safety

The Battery Energy Storage Alternative technology would not require an exhaust stack. This alternative would consist of a battery charging and storage system that would include two, 100-MW containment buildings for a total of 200 MWs of battery energy storage capacity at the site. Each building would cover approximately 50,000 square feet and stand approximately 50 feet tall. According to the FAA Notice of Criteria Tool, a building 50 feet tall at the project site would have the potential for navigation signal interference and would need to file Form 7460-1. The impact of this alternative would be **similar to Mission Rock**, and the impact conclusion is indeterminate.

Staff assumes the Battery Energy Storage Alternative would require the same transmission system along the same route as under the proposed Mission Rock project. Completion of the full impact analysis of the transmission system under the proposed Mission Rock project is contingent on an FAA determination. Staff concludes that the potential for the Battery Energy Storage Alternative to cause a significant impact on navigation signals and aircraft traffic relating to the location of transmission lines is the **same as Mission Rock**, and the impact conclusion is indeterminate.

The concept for the Battery Energy Storage Alternative includes two, 50-foot-tall concrete buildings. Compared to the exhaust stacks of the proposed Mission Rock project, the tallest structures for this alternative (not including the transmission structures) would be about 10 feet shorter.

Staff concludes that the impact of the tallest structures on the site under the Battery Energy Storage Alternative would not create a significant physical obstruction to aircraft arrival/departure tracks. The impact would be **similar to Mission Rock,** and the impact conclusion for the proposed project and this alternative is less than significant.

Visual Resources

This subsection evaluates the comparative impacts of the Battery Energy Storage Alternative to the impacts of the proposed project at the Mission Rock site.

Visual Setting, Viewer Concern, and Viewer Exposure

This alternative is located at the Mission Rock site with the same site boundary as the proposed project, and the visual setting is the same. The site is approximately one-half mile south of SR 126 and one-quarter mile north of the Santa Clara River. Visual quality is *very low* in the immediate vicinity, consisting of various industrial uses of very low visual quality. The industrial area is surrounded by low-growing, visually open agricultural fields, in contrast to much of the valley, which consists predominantly of citrus orchards. The Ventura County Jail is approximately one-quarter mile west of the site; and a large-scale fruit packing and processing plant of industrial appearance lies roughly one-third mile north, in the immediate visual foreground of SR 126.

Viewer sensitivity in the visual sphere of influence is the same as that of the proposed project. Overall visual sensitivity of selected key observation points in the Mission Rock viewshed is considered generally *moderate* to *moderately high*. Much of the proposed transmission line alignment would be located within an area with *moderately high* visual quality, and at least *moderately high* viewer concern due to the presence of the SCVRHD.

Visual Impacts

Instead of Mission Rock's maximum exhaust stack height of 60 feet, this alternative's main structures would have a maximum height of approximately 50 feet. This difference would not materially affect the magnitude of the visual impact on sensitive viewers of the energy facility. Buildings of this alternative would have a somewhat larger footprint than the proposed structures of the Mission Rock project. This difference would also have no material change in effect on the level of visual impact. For the proposed project and the Battery Energy Storage Alternative, motorists on SR 126 would experience a *low to moderate* level of visual change with views of the power plant added to the viewshed. In general, visual impacts of the Battery Energy Storage Alternative would be **similar to Mission Rock** and potentially significant. Mitigation measures would require adding surface treatments to the concrete battery containment buildings, fire water storage tank, and other structures that could be visible from public use areas; installing site periphery screening such as a decorative wall or opaque fence; and installing drought tolerant landscape plantings to soften views of the site. With implementation of such mitigation measures, potentially significant visual impacts at the site would be reduced to less-than-significant levels.

Nighttime light and glare impacts could occur during construction and operation of this alternative. Although the heights and massing of structures would be different, lighting effects would be **similar to Mission Rock**. With implementation of lighting to direct light downward, prevent off-site light spillage, and avoid light backscatter to the sky, light and glare impacts would be reduced to less than significant.

Mission Rock's major visual effect would be caused by portions of the 6.6-mile-long transmission line at various public locations within the visually-sensitive SCVRHD. This significant impact would be the **same as Mission Rock**. Even with conditions of certification imposed to reduce visual impacts, the transmission line would remain highly visible in proximity to numerous visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse effects. (See the **Visual Resources** section of this staff assessment for a description of scenic resources associated with the SCVRHD.)

Comparative Impact Conclusions

The facilities, located on the same site, are of similar scale and height and would have similar types and levels of impacts. Impacts of the Battery Energy Storage Alternative would be substantially **similar to Mission Rock**. The visual impact of the associated transmission line is considered the **same as Mission Rock**.

Worker Safety and Fire Protection

The Battery Energy Storage Alternative that uses Lithium-ion batteries on the site would have similar but not as extensive worker safety and fire protection requirements as the proposed project. Since the general requirements are similar (worker safety must be provided and fire detection/suppression systems must be installed and operable for both the proposed project and this alternative) and differ only in degree and specific fire protection measures, the Battery Energy Storage Alternative would present potentially significant impacts that could be reduced to less than significant, **similar to Mission Rock**.

In conversations with the Ventura County Fire Department (VCFD), staff was informed that the VCFD is capable of responding to all emergency service needs (fire, rescue, hazmat spill, and medical) throughout the county in a timely manner, and no additional mitigation measures would be needed for any new energy facility in the county, including one that would use Lithium-ion batteries for energy storage. The fire and explosion hazards of Lithium-ion batteries were specifically discussed with the VCFD. Because the VCFD has dispatch authority linked to all fire departments in the county, and not just within its own jurisdiction and its own response teams, drawdown of resources would be extremely rare. Therefore, staff concludes that like the proposed project, **no impacts** would occur relating to emergency response time or risk of significant drawdown of emergency medical services.

SUMMARY COMPARISON OF KEY ENVIRONMENTAL IMPACTS AND CONCLUSIONS

This staff assessment provides a detailed evaluation of the environmental impacts of each of the alternatives. The following subsections summarize key environmental impact comparisons and discuss each alternative's ability to meet the project objectives (listed near the beginning of this **Alternatives** section under the "Project Objectives" subsection).

NO-PROJECT ALTERNATIVE

Several environmental impacts relating to Mission Rock's project construction and operations would be avoided under the No-Project Alternative. Staff has identified three environmental impacts that would be greater than Mission Rock under the No-Project Alternative. Under the proposed project, environmental impacts are reduced to less than significant with implementation of conditions of certification and through LORS compliance.

Environmental Impacts That Would Be Avoided

- **Air Quality** – Project construction and operations emissions
- **Biological Resources**
    - Impact on riparian habitat
    - Impacts on three listed species would be avoided, including least Bell's vireo, southwestern willow flycatcher, and willow flycatcher
    - Impact relating to potential electrocution of avian species (large raptors)
    - Impact of transmission line/poles collision on listed avian species
- **Cultural Resources**
    - Impacts on the Santa Clara Valley Rural Historic District
    - Potential impacts on buried archaeological resources
- **Geology and Paleontology** – Risk of damage to paleontological resources
- **Hazardous Material Management**
    - Risk of accidental release of hazardous materials
- **Noise and Vibration** – Potential noise impacts at noise-sensitive locations
- **Public Health** – Toxic air emissions with the potential to impact public health
- **Soil and Water Resources**
    - Potential impacts on water quality during project construction
    - Impact of wastewater discharge from power plant operations

- **Traffic and Transportation**
    - Potential for workforce traffic to impact traffic loads and driver safety
    - Impacts on aircraft and pilot safety from thermal plumes
    - Potential impacts on navigation signal reception
- **Visual Resources** – Impact on the high-sensitivity visual and historical resources in the viewshed of the transmission line route (i.e., the Santa Clara Valley Rural Historic District)
- **Waste Management** – Potential impacts on human health and the environment from removal of wastes or release of on-site contaminants
- **Worker Safety and Fire Protection** – Risks and hazards to on-site workers

Environmental Impacts That Would Be Greater Than Mission Rock

- **Soil and Water Resources**
    - Site would remain in the 100-year event floodplain
    - Peak flow and total volume of storm water runoff would remain high compared to conditions expected with construction of Mission Rock
    - Measures to prevent or reduce pollutants in storm water runoff would not be implemented as they would with construction of Mission Rock

PETROCHEM REFINERY OFF-SITE ALTERNATIVE

Staff compared the impacts of the Petrochem Refinery Off-site Alternative to the same or similar impacts of the proposed Mission Rock project. This off-site alternative assumes constructing and operating a project similar to Mission Rock at this alternative site. It assumes no construction and operation of the proposed project at the Mission Rock site.

Significant Impacts That Would Be Avoided under This Alternative

Biological Resources

- Impacts on riparian habitat (state waters)

This alternative site is near the Ventura River but outside of the regulatory floodway, and no removal of riparian vegetation near the river would occur. Under Mission Rock, installation of the transmission line structures would impact a total of 0.216 acre of riparian habitat. Biological resources staff recommends a condition of certification to reduce the impact to less than significant.

Cultural Resources

- Impacts on built environment resources

Mission Rock's transmission line would cause significant impacts on the Santa Clara Valley Rural Historic District (SCVRHD), and staff recommends several conditions of certification to reduce the impacts to less-than-significant levels. Even without intensive cultural resources surveys, staff concludes that this alternative would result in a far lower number of impacts on built environment cultural resources, if such resources were identified for this alternative. If significant impacts were identified, mitigation measures would be recommended to reduce those impacts to less than significant.

Visual Resources

- Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings

Staff identifies a significant impact on the high-sensitivity visual and historical resources in the viewshed of Mission Rock's transmission line route (the SCVRHD). With conditions of certification imposed, the Mission Rock transmission line would remain highly visible near visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse impacts on visual resources. There are no comparable scenic and historical resources or sensitivities in this alternative's viewshed. The potential for this alternative to substantially damage scenic resources and degrade the existing visual character or quality of the site and its surroundings is considerably less than Mission Rock.

Potentially Significant Impact That Would Be Reduced under This Alternative

Traffic and Transportation

- Impacts on aircraft and pilot safety from thermal plumes

A power plant like Mission Rock would generate high-velocity thermal plumes that could pose hazards to aircraft up to approximately 1,490 feet above ground level (AGL). Staff identifies this as a potentially significant impact of the proposed project. The Petrochem Refinery Off-site Alternative is located under the V-186 flight route where aircraft would likely be piloted at an altitude of approximately 5,000 feet AGL. At this altitude, pilots would not encounter a high-velocity thermal plume from a project like Mission Rock. Nonetheless, out of an abundance of caution, staff would recommend a mitigation measure to reduce the likelihood of a potential impact occurring.

Significant Impact That Would Be Greater under This Alternative

Biological Resources

- Impacts of transmission lines/poles relating to the risk of collision for listed avian species

The impacts from transmission line collisions could impact listed species (southwestern willow flycatcher and willow flycatcher) during nocturnal migration. These impacts are considered significant under the proposed project. The conceptual transmission line alignment for the Petrochem Refinery Off-site Alternative is longer than Mission Rock by close to 2 miles. Estimated deaths from the approximately 8-mile-long transmission line for listed southwestern willow flycatcher and willow flycatcher would almost double compared to Mission Rock at approximately 20 for the life of the project (30 years) under this alternative.

DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

Staff compared the impacts of the Del Norte/Fifth Street Off-site Alternative to the same or similar impacts of the proposed Mission Rock project. This off-site alternative assumes constructing and operating a project similar to Mission Rock at this alternative site. It assumes no construction and operation of the proposed project at the Mission Rock site.

Significant Impacts That Would Be Avoided under This Alternative

Biological Resources

- Project construction noise impacts on listed bird species

Construction of Mission Rock would create noise levels that would disturb the least Bell's vireo, a state and federally listed endangered species, breeding in adjacent riparian habitat along the Santa Clara River. The nearest least Bell's vireo habitat is approximately 4½ miles from this alternative site, and no impacts on this species would occur under this alternative. No listed bird species are identified within range of this off-site alternative.

Cultural Resources

- Impacts on built environment resources

Mission Rock's transmission line would cause significant impacts on the SCVRHD, and staff recommends several conditions of certification to reduce the impacts to less-than-significant levels. Even without intensive cultural resources surveys, staff concludes that this alternative would result in a far lower number of impacts on built environment cultural resources, if such resources were identified for this alternative. If significant impacts were identified, mitigation measures would be recommended to reduce those impacts to less than significant.

Visual Resources

- Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings

Staff identifies a significant impact on the high-sensitivity visual and historical resources in the viewshed of Mission Rock's transmission line route (the SCVRHD). With conditions of certification imposed, the Mission Rock transmission line would remain highly visible near visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse impacts on visual resources. There are no comparable scenic and historical resources or sensitivities in this alternative's viewshed. The potential for this alternative to substantially damage scenic resources and degrade the existing visual character or quality of the site and its surroundings is considerably less than Mission Rock.

Significant Impact That Would Be Greater under This Alternative

Biological Resources

- Impacts of transmission lines/poles relating to the risk of collision for listed avian species

The impacts from transmission line collisions could impact listed species (southwestern willow flycatcher and willow flycatcher) during nocturnal migration. These impacts are considered significant under the proposed project. The conceptual transmission line alignment for the Del Norte/Fifth Street Off-site Alternative is longer than Mission Rock by close to 3½ miles. Estimated deaths from the longer transmission line for listed southwestern willow flycatcher and willow flycatcher would be considerably greater than Mission Rock under this alternative.

Potentially Significant Impact That Would Occur under This Alternative (Impact Would Not Occur under Mission Rock)

Cultural Resources

- Impacts on surficial archaeological and ethnographic resources

Staff's record search indicated that 28 cultural resource studies were conducted within one-half mile of this alternative site. A total of fifteen prehistoric archaeological sites were recorded within one-half mile of the site, including six that are on or adjacent to the site. Staff's review of ethnographic maps indicates that a village site was located very close to the Del Norte/Fifth Street Off-site Alternative. Inhabitants of the village site may be the cause of some of the 15 recorded archaeological resources. There are no sites recorded on the surface of the Mission Rock site. Staff concludes that potential impacts on surficial archaeological and ethnographic resources would be greater than Mission Rock under this alternative. Potential impacts would be reduced to less-than-significant through project design or data collection.

Potentially Significant and Unavoidable Impact That Would Occur under This Alternative (Potentially Significant Impact under Mission Rock)

Traffic and Transportation

- Impacts on aircraft and pilot safety from thermal plumes

A power plant like Mission Rock would generate high-velocity thermal plumes that could pose hazards to aircraft up to approximately 1,490 feet AGL. Under Mission Rock, aircraft following the Santa Paula Airport's traffic pattern would not be expected to fly over the Mission Rock site. Nonetheless, staff identifies this as a potentially significant impact of the proposed project. With implementation of a mitigation measure that would warn pilots of a power plant's location, direct overflight of the Mission Rock site could be avoided.

Under the Del Norte/Fifth Street Off-site Alternative, arriving aircraft and arriving and departing helicopters using Camarillo Airport often pass very close to, if not directly over this alternative site at relatively low altitudes. This alternative would introduce a new hazard for pilots to avoid near the traffic pattern and in an area commonly overflown by pilots using the airport. Impacts on aircraft and pilot safety for this off-site alternative would be greater than Mission Rock, and the impact conclusion is significant. Mitigation measures that staff would recommend to reduce the impact to less than significant could be infeasible.

Therefore, staff concludes that this significant impact with potentially infeasible mitigation could create a potentially significant and unavoidable impact for this alternative.

ORMOND BEACH AREA OFF-SITE ALTERNATIVE

Staff compared the impacts of the Ormond Beach Area Off-site Alternative to the same or similar impacts of the proposed Mission Rock project. This off-site alternative assumes constructing and operating a project similar to Mission Rock at this alternative site. It assumes no construction and operation of the proposed project at the Mission Rock site.

Significant Impacts That Would Be Avoided under This Alternative

Biological Resources

- Impacts on riparian habitat (state waters)
- Project construction noise impacts on listed bird species

Under Mission Rock, installation of the transmission line structures would impact a total of 0.216 acre of riparian habitat. Biological resources staff recommends a condition of certification to reduce the impact to less than significant. Habitat on the Ormond Beach Area Off-site Alternative is degraded or has been removed. There is no drainage on the site or riparian habitat present; therefore, no impacts on riparian habitat would occur.

Construction of Mission Rock would create noise levels that would disturb the least Bell's vireo, a state and federally listed endangered species, breeding in adjacent riparian habitat along the Santa Clara River. Under the Ormond Beach Area Off-site Alternative, this impact would not occur because there is no riparian habitat and the nearest suitable nesting habitat is over 6 miles from this alternative site.

Visual Resources

- Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings

Staff identifies a significant impact on the high-sensitivity visual and historical resources in the viewshed of Mission Rock's transmission line route (the SCVRHD). With conditions of certification imposed, the Mission Rock transmission line would remain highly visible near visually-sensitive historical resources, with resulting residual, if less-than-significant, long-term adverse impacts on visual resources. There are no comparable scenic and historical resources or sensitivities in this alternative's viewshed. The potential for this alternative to substantially damage scenic resources and degrade the existing visual character or quality of the site and its surroundings is considerably less than Mission Rock.

Significant Impacts That Would Be Reduced under This Alternative

Biological Resources

- Impacts of transmission lines/poles relating to the risk of collision for listed avian species

The impacts from transmission line collisions could impact listed species (southwestern willow flycatcher and willow flycatcher) during nocturnal migration. These impacts are considered significant under the proposed project. The conceptual transmission line alignment for the Ormond Beach Area Off-site Alternative is considerably shorter compared to Mission Rock (less than 1 mile for this alternative compared to 6.6 miles for Mission Rock). Estimated deaths from the shorter transmission line for listed southwestern willow flycatcher and willow flycatcher would be reduced under this alternative.

Cultural Resources

- Impacts on built environment resources

Mission Rock's transmission line would cause significant impacts on the SCVRHD, and staff recommends several conditions of certification to reduce the impacts to less-than-significant levels.

Construction of a power plant like Mission Rock at the Ormond Beach Area Off-site Alternative has the potential to impact a spur line of the Ventura County Railway. Staff presumes the spur line is a contributing element and a historical resource for the purposes of CEQA. Avoidance of the resource through site design could reduce a potentially significant impact to less than significant. While this alternative could impact the rail spur, staff concludes that it would result in a far lower number of impacts on built environment cultural resources. If significant impacts were identified, mitigation measures would be recommended to reduce those impacts to less than significant.

Potentially Significant Impact That Would Occur under This Alternative (Impact Would Not Occur under Mission Rock)

Biological Resources

- Impacts of nitrogen deposition on biological resources

There are no impacts from Mission Rock relating to nitrogen deposition. Staff determined that potential dune habitat is located approximately one-quarter mile west of the Ormond Beach Area Off-site Alternative. Because this off-site alternative is relatively close to sensitive habitat, staff identifies the potential for nitrogen deposition to impact sensitive habitat. Mitigation measures would reduce potential impacts to less than significant.

Potentially Significant or Significant and Unavoidable Impact That Would Occur under This Alternative (Potentially Significant Impact under Mission Rock)

Traffic and Transportation

- Impacts on aircraft and pilot safety from thermal plumes

A power plant like Mission Rock would generate high-velocity thermal plumes that could pose hazards to aircraft up to approximately 1,490 feet AGL. Under Mission Rock, aircraft following the Santa Paula Airport's traffic pattern would not be expected to fly over the Mission Rock site. Nonetheless, staff identifies this as a potentially significant impact of the proposed project. With implementation of a mitigation measure that would warn pilots of a power plant's location, direct overflight of the Mission Rock site could be avoided.

Under the Ormond Beach Area Off-site Alternative, thermal plumes would have an impact on regular aircraft operations at Naval Base Ventura County (NBVC) Point Mugu. For this reason, potential thermal plume impacts on aircraft and pilot safety for this off-site alternative would be greater than Mission Rock, and the impact conclusion is potentially significant. A mitigation measure recommending a change in the regular naval operations at NBVC Point Mugu to avoid the site could reduce the impact to less than significant. However, the feasibility of such a mitigation measure is unknown. The potentially significant impact and potentially infeasible mitigation could create a potentially significant and unavoidable impact for the Ormond Beach Area Off-site Alternative.

BATTERY ENERGY STORAGE ALTERNATIVE

Staff compared the impacts of the Battery Energy Storage Alternative to the same or similar impacts of the proposed project. This project alternative assumes constructing and operating a 200-MW battery energy storage project in place of the proposed project at the Mission Rock site. It assumes no construction and operation of the project, as proposed, at the Mission Rock site. The transmission line route and grid connection at the Santa Clara Substation is assumed to be the same as proposed for Mission Rock. Therefore, the significant cultural and visual resources impacts on the Santa Clara Valley Rural Historic District would also occur under this alternative.

Potentially Significant Impact that Would Be Avoided under This Alternative

Traffic and Transportation

- Impacts on aircraft and pilot safety from thermal plumes

Mission Rock would generate high-velocity thermal plumes that could pose hazards to aircraft up to approximately 1,490 feet AGL. Under Mission Rock, aircraft following the Santa Paula Airport's traffic pattern would not be expected to fly over the Mission Rock site. Nonetheless, staff identifies this as a potentially significant impact of the proposed project. With implementation of a mitigation measure that would warn pilots of the power plant's location, direct overflight of the Mission Rock site should not occur.

The Battery Energy Storage Alternative would not generate thermal plumes, and no impact would occur under this alternative. Mission Rock's thermal plume impact on aircraft and pilot safety would be avoided.

Significant Impacts That Would Be Reduced under This Alternative

Air Quality

- Project operations greenhouse gas emissions

Given the likely sources to fuel the batteries would tend towards surplus electricity (i.e., excess solar and wind generation), staff concludes that the greenhouse gas impact would be less than Mission Rock for this alternative.

Noise and Vibration

- Potential noise impacts at noise-sensitive locations

Operating equipment for the Battery Energy Storage Alternative would generally be quieter than combustion turbine units due to several factors, such as fewer large mechanical and rotating components and absence of high-pressure fluids. Therefore, project operations noise would be less than Mission Rock. Although noise impacts associated with construction and operation of this alternative would be less than Mission Rock, mitigation measures would be required to reduce potential noise impacts to less-than-significant levels.

Soil and Water Resources

- Wastewater discharge impacts
- Impacts on water quality

Compared to Mission Rock, the amount of industrial wastewater would be considerably less under the Battery Energy Storage Alternative. Wastewater would also be much less likely to contain toxic or hazardous pollutants compared to Mission Rock. This alternative would not require the chemicals or toxic substances needed to operate Mission Rock, and no industrial equipment (such as power blocks) would be exposed to rain water that could potentially cause runoff containing oil and suspended solids. As a result, the Battery Energy Storage

Alternative would have a reduced potential to cause significant impacts relating to water quality and wastewater discharges. Potential water quality impacts of industrial wastewater discharges of this alternative would be less than Mission Rock.

CONCLUSIONS

The conclusions for the comparative analysis of alternatives are provided below.

No-Project Alternative

The No-Project Alternative would avoid several impacts of project construction and operation. However, soil and water resources staff concludes that continuation of existing conditions at the site would result in a higher potential for impacts to occur relating to flooding, storm water runoff, and water quality. Mission Rock would implement preventative measures to reduce the potential for these impacts to occur. These impacts would be greater than Mission Rock. The No-Project Alternative would not attain the project's basic objectives, including the primary objective or underlying purpose of Mission Rock, which is to meet the local capacity requirement (LCR) need in the Moorpark sub-area of the Big Creek/Ventura local reliability area (LRA) by 2021.

Petrochem Refinery Off-site Alternative

Cultural resources staff concludes that the Petrochem Refinery Off-site Alternative would avoid Mission Rock's significant impacts on built environment resources, which are the resources of the SCVRHD that would be greatly affected by the proposed project's transmission line alignment. Cultural resources staff also concludes that this alternative would result in a far lower number of impacts on built environment resources, if such resources were identified near the conceptual transmission line alignment for the Petrochem Refinery Off-site Alternative.

Similarly, visual resources staff concludes that the Petrochem Refinery Off-site Alternative would avoid impacts on the SCVRHD's high-sensitivity visual and historical resources in the viewshed of the proposed project's transmission line alignment. Staff identifies no comparable scenic and historical resources or sensitivities in this alternative's viewshed. The potential for this alternative to substantially damage scenic resources and degrade the existing visual character or quality of the site (i.e., the transmission line viewshed) and its surroundings is considerably lower compared to Mission Rock.

Traffic and transportation staff concludes that the Petrochem Refinery Off-site Alternative would reduce potentially significant impacts on aircraft and pilot safety from thermal plumes. Staff bases this conclusion on the location of this off-site alternative, which is below the V-186 flight route where aircraft would likely be piloted at an altitude of approximately 5,000 feet above ground level. At this altitude, pilots would not encounter a high-velocity thermal plume from a project like Mission Rock at the alternative site.

Biological resources staff concludes that the Petrochem Refinery Off-site Alternative would avoid impacts on riparian habitat (state waters). Mission Rock would impact a little under one-quarter acre of riparian habitat. Of the total affected acreage, 0.005 acre of riparian habitat would be permanently removed. The remaining 0.211 acre would be revegetated with native species following construction. Biological resources staff also concludes that this off-site alternative could cause greater potential impacts on listed bird species (southwestern willow flycatcher and willow flycatcher) flying into transmission line structures during nocturnal migration. The impact would increase compared to Mission Rock due to the longer transmission line for this alternative.

The Petrochem Refinery Off-site Alternative would avoid or reduce five of Mission Rock's significant impacts. (Under the proposed project, environmental impacts are reduced to less than significant with implementation of conditions of certification and through LORS compliance.) However, because this alternative's conceptual transmission line would be longer than Mission Rock's by close to 2 miles, it would increase the potential for listed bird species to collide with transmission line structures.

The Petrochem Refinery Off-site Alternative could potentially satisfy the project's basic objectives, including the underlying project purpose, which is to meet the LCR need in the Moorpark sub-area of the Big Creek/Ventura LRA by 2021. However, it is uncertain whether the applicant could obtain site control and complete environmental review and licensing to have a project built and commissioned at the site to meet LCR needs by 2021. The applicant withdrew Mission Rock from the California ISO interconnection queue Cluster 9, and staff is now unable to determine whether any downstream facilities would be required for an interconnection at the Santa Clara Substation for the proposed project or this alternative.

Del Norte/Fifth Street Off-site Alternative

Cultural resources staff concludes that the Del Norte/Fifth Street Off-site Alternative would avoid Mission Rock's significant impacts on built environment resources, which are the resources of the SCVRHD that would be greatly affected by the proposed project's transmission line alignment. Cultural resources staff also concludes that this alternative would result in a far lower number of impacts on built environment resources, if such resources were identified near the conceptual transmission line alignment for the Del Norte/Fifth Street Off-site Alternative.

Similarly, visual resources staff concludes that the Del Norte/Fifth Street Off-site Alternative would avoid impacts on the SCVRHD's high-sensitivity visual and historical resources in the viewshed of the proposed project's transmission line alignment. Staff identifies no comparable scenic and historical resources or sensitivities in this alternative's viewshed. The potential for this alternative to substantially damage scenic resources and degrade the existing visual character or quality of the site (i.e., the transmission line viewshed) and its surroundings is considerably lower compared to Mission Rock.

Biological resources staff concludes that the Del Norte/Fifth Street Off-site Alternative would avoid impacts of construction noise on least Bell's vireo, a state and federally listed endangered species. Breeding habitat for this species is located in the riparian habitat along the Santa Clara River near the Mission Rock site. Biological resources staff also concludes that this off-site alternative could cause greater potential impacts on listed bird species (southwestern willow flycatcher and willow flycatcher) flying into transmission line structures during nocturnal migration. The impact would increase compared to Mission Rock due to the longer transmission line for this alternative.

Cultural resources staff concludes that the Del Norte/Fifth Street Off-site Alternative would cause potentially significant impacts on surficial archeological and ethnographic resources. This is an impact that would not occur at the Mission Rock site. Traffic and transportation staff concludes that this alternative would cause *potentially significant and unavoidable impacts on aircraft and pilot safety* from high-velocity thermal plumes that would be emitted by a power plant like Mission Rock at this alternative site.

The Del Norte/Fifth Street Off-site Alternative would avoid or reduce several of Mission Rock's significant impacts. (Under the proposed project, environmental impacts are reduced to less than significant with implementation of conditions of certification and through LORS compliance.) However, it would increase the potential for listed bird species to collide with transmission line structures. This alternative would cause potentially significant impacts on surficial archaeological and ethnographic resources, and no comparable impacts would occur at the Mission Rock site. These cultural resources impacts together with this alternative's potentially significant and unavoidable impacts on aircraft and pilot safety probably outweigh the impacts that would be reduced or avoided under this alternative.

Notwithstanding this alternative's greater impacts compared to Mission Rock, the Del Norte/Fifth Street Off-site Alternative could potentially satisfy the project's basic objectives, including the underlying project purpose, which is to meet the LCR need in the Moorpark sub-area of the Big Creek/Ventura LRA by 2021. Potential feasibility issues similar to those described for the Petrochem Refinery Off-site Alternative would affect this alternative's viability.

Ormond Beach Area Off-site Alternative

Visual resources staff concludes that the Ormond Beach Area Off-site Alternative would avoid impacts on the SCVRHD's high-sensitivity visual and historical resources in the viewshed of the proposed project's transmission line alignment. Staff identifies no comparable scenic and historical resources or sensitivities in this alternative's viewshed. The potential for this alternative to substantially damage scenic resources and degrade the existing visual character or quality of the site (i.e., the transmission line viewshed) and its surroundings is considerably lower compared to Mission Rock.

Biological resources staff concludes that the Ormond Beach Area Off-site Alternative would avoid impacts of construction noise on least Bell's vireo, a state and federally listed endangered species. Breeding habitat for this species is located in the riparian habitat along the Santa Clara River near the Mission Rock site.

This alternative would avoid impacts on riparian habitat (state waters), whereas Mission Rock would impact a little under one-quarter acre of riparian habitat. Biological resources staff also concludes that this off-site alternative would reduce potential impacts on listed bird species relating to collisions with transmission line structures. Staff identifies the potential for nitrogen deposition to impact sensitive habitat in the vicinity of this alternative site, which is a potentially significant impact that would not occur under Mission Rock.

Cultural resources staff concludes that the Ormond Beach Area Off-site Alternative would reduce significant impacts on built environment resources compared to Mission Rock. Under Mission Rock, resources of the SCVRHD that would be greatly affected by the proposed project's transmission line alignment would not be impacted under this alternative. Staff also concludes that while this alternative could potentially impact a contributing element and historical resource (spur line of the Ventura County Railway), this alternative would result in a far lower number of impacts on built environment resources compared to Mission Rock.

Traffic and transportation staff concludes that this alternative could cause *potentially significant and unavoidable impacts on aircraft and pilot safety* from high-velocity thermal plumes that would be emitted by a power plant like Mission Rock at the Ormond Beach Area Off-site Alternative.

The Ormond Beach Area Off-site Alternative would avoid or reduce several of Mission Rock's significant impacts. (Under the proposed project, environmental impacts are reduced to less than significant with implementation of conditions of certification and through LORS compliance.) However, it would have the potential for nitrogen deposition to impact sensitive habitat in the site vicinity, which is an impact that would not occur under Mission Rock. This alternative's potentially significant and unavoidable impacts on aircraft and pilot safety (because of the questionable feasibility of mitigation measures) could outweigh the impacts that would be reduced or avoided under this alternative.

Notwithstanding this alternative's probable greater impacts compared to Mission Rock, the Ormond Beach Area Off-site Alternative could potentially satisfy the project's basic objectives, including the underlying project purpose, which is to meet the LCR need in the Moorpark sub-area of the Big Creek/Ventura LRA by 2021. Potential feasibility issues similar to those described for the Petrochem Refinery Off-site Alternative would affect this alternative's viability.

Battery Energy Storage Alternative

Energy recovery from the Battery Energy Storage Alternative would not involve on-site combustion of fossil fuels, and this alternative would not require the on-site fuel system equipment that would support Mission Rock. There would be no combustion turbine generators (CTGs) and no exhaust stacks. Therefore, this alternative would not generate high-velocity thermal plumes, and potentially significant impacts on aircraft and pilot safety would be avoided under this alternative.

Air quality staff concludes that project operations greenhouse gas emissions would be reduced under this alternative.

Noise and vibration staff concludes that equipment operations noise for this alternative would generally be quieter than Mission Rock's CTGs; therefore, project operations noise would be less than Mission Rock.

Soil and water resources staff concludes that quantities of industrial wastewater would be considerably less than Mission Rock under the Battery Energy Storage Alternative. This alternative would not require the chemicals or toxic substances needed for Mission Rock, and no industrial equipment would be exposed to rain water that could cause runoff containing oil and suspended solids. Wastewater discharge impacts and potential impacts on water quality would be less than Mission Rock.

The Battery Energy Storage Alternative would avoid or reduce five of Mission Rock's potentially significant impacts. (Under the proposed project, environmental impacts are reduced to less than significant with implementation of conditions of certification and through LORS compliance.) Staff has identified no new or unique impacts that would occur under this alternative. The transmission line route and grid connection at the Santa Clara Substation is assumed to be the same as Mission Rock, and the significant cultural and visual resources impacts on the SCVRHD would also occur under this alternative. However, this alternative would not increase the severity of any impact identified under Mission Rock.

The first project objective is to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology to meet the need for new local capacity in the Moorpark sub-area by 2021, and contribute to the integration of renewable energy resources into the electric power grid. Staff considers the primary objective or underlying purpose of Mission Rock is to meet the LCR need in the Moorpark sub-area of the Big Creek/Ventura LRA by 2021.

The California ISO prepared and submitted a special study for the Puente proceeding that outlines alternative resource scenarios that could meet the LCR need absent Puente [or absent Mission Rock] (California ISO 2017b). Staff acknowledges that the configuration of batteries in staff's alternative does not appear to match the alternative resource scenarios evaluated by the California ISO to meet the Moorpark sub-area LCR. However, staff discusses its 200-MW battery energy storage configuration as a way to provide a relative comparison of environmental impacts of a battery-based alternative to the proposed project.

Staff's Battery Energy Storage Alternative could contribute to meeting the LCR need (i.e., the underlying project purpose) and would reduce some environmental impacts associated with a natural gas-fired project. A battery energy storage system that would fully meet the LCR need, which staff is not responsible for or capable of designing, would not reverse the conclusions in the comparative analyses of impacts for this alternative, but could change the relative impact comparisons.

For example, impacts on visual resources would require analyzing the height and massing of structures containing the batteries in a proposal for such a project.

The second project objective is to develop a 275-MW, natural gas-fired, simple-cycle generating facility. The Battery Energy Storage Alternative would not satisfy this objective.

The applicant's last two objectives address siting the project as near as possible to a Southern California Edison substation with available transmission capacity to serve the Moorpark sub-area and reusing a brownfield site in an industrial area. This alternative would be located at the Mission Rock site with the same grid connection point as the proposed project. Staff assumes that the Battery Energy Storage Alternative at the Mission Rock site could potentially satisfy these two project objectives. However, the applicant withdrew Mission Rock from the California ISO interconnection queue Cluster 9 and joined queue Cluster 10, and staff is now unable to determine whether any downstream facilities would be required for an interconnection at the Santa Clara Substation for the proposed project or this alternative. The Phase I interconnection study for Mission Rock should be available in the first quarter of 2018.

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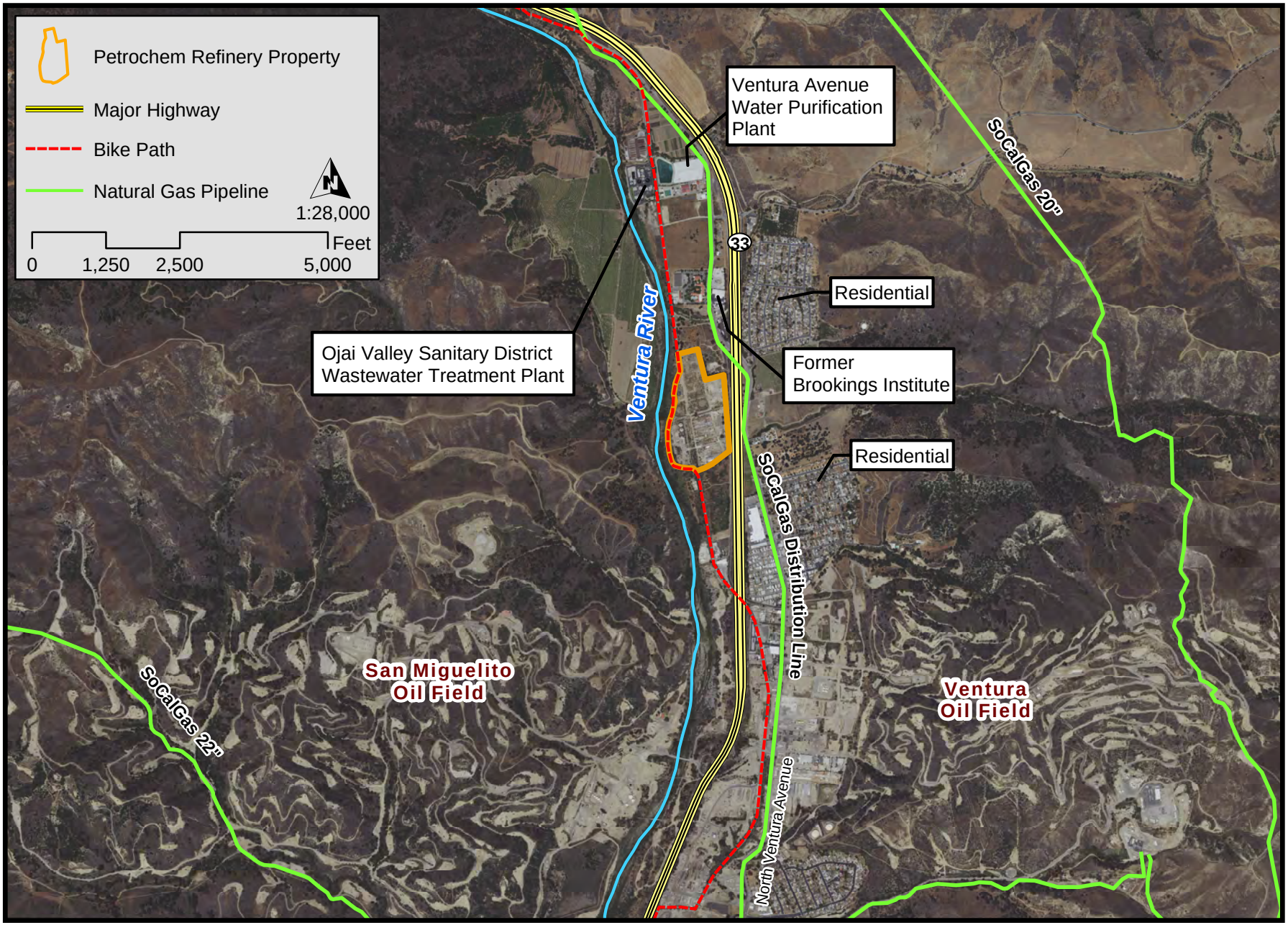
ALTERNATIVES - FIGURE 1

Mission Rock Energy Center - Petrochem Refinery Off-site Alternative Region

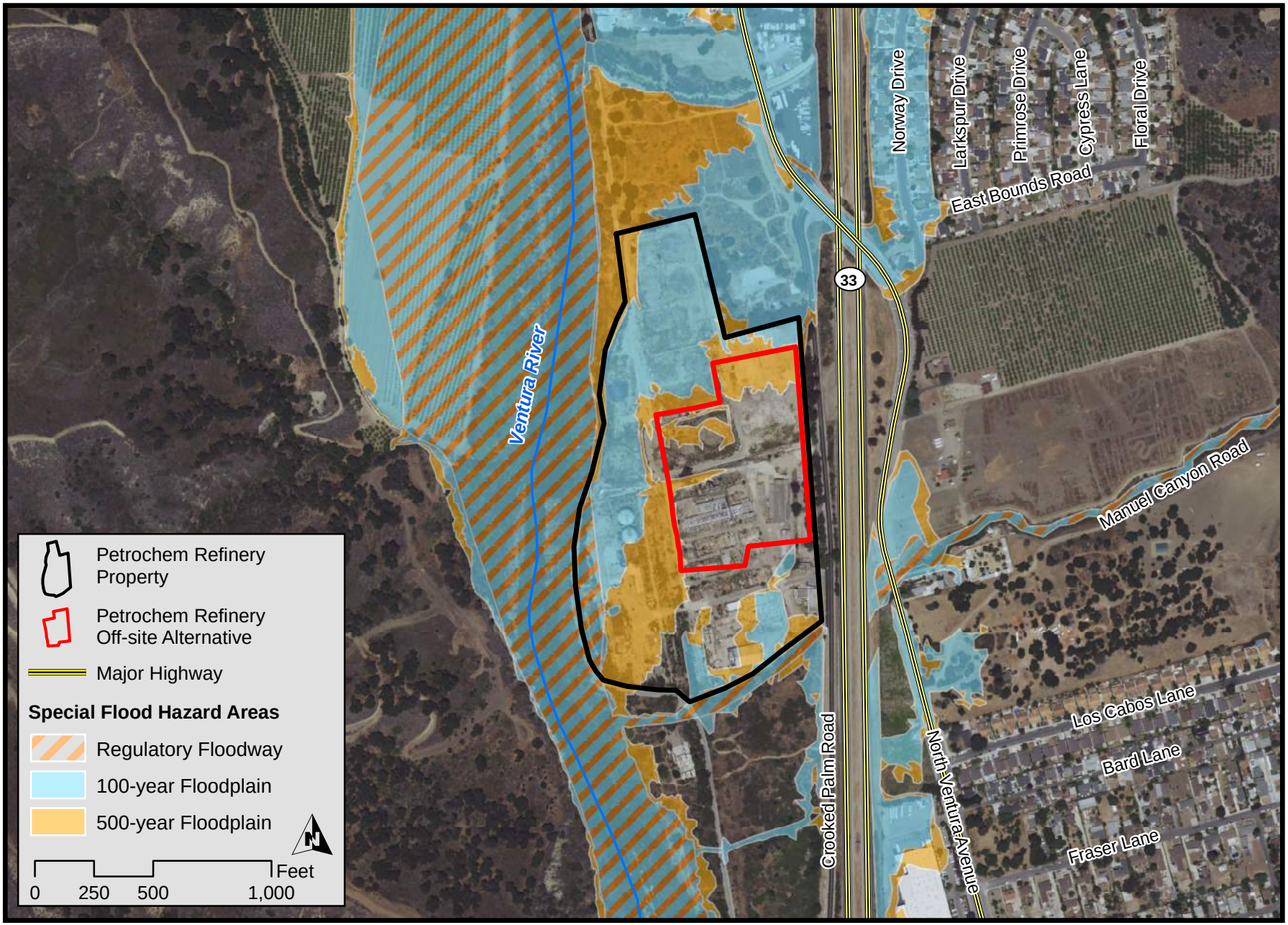


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: Adapted from Calpine 2015, USDA NAIP Imagery 2016

ALTERNATIVES - FIGURE 2

Mission Rock Energy Center - Preliminary FEMA Flood Insurance Rate Map for the Petrochem Refinery Off-site Alternative Area

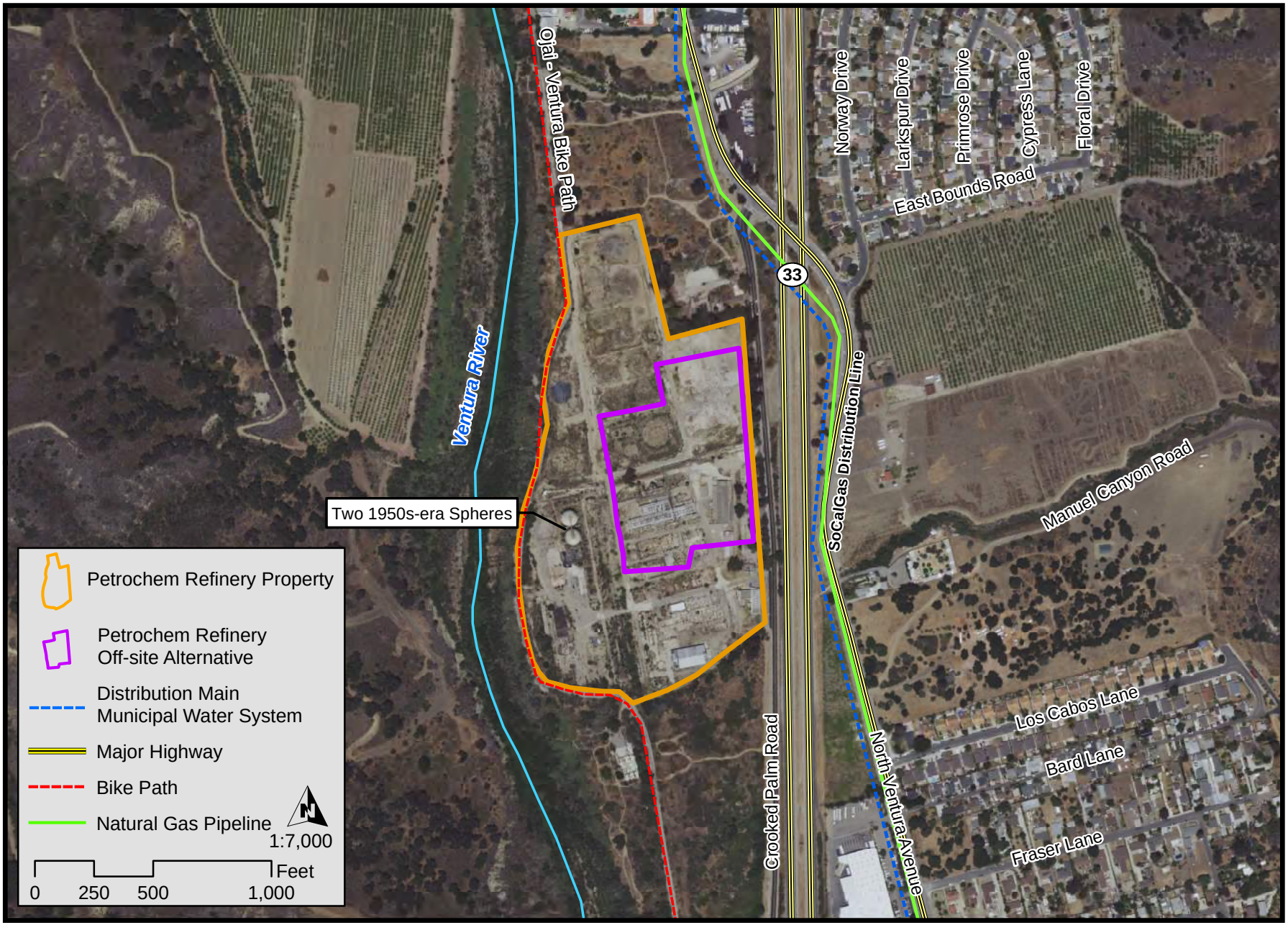


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: Adapted from Calpine 2015, USDA NAIP Imagery 2016, Based on Federal Emergency Management Agency 2015

ALTERNATIVES - FIGURE 3

Mission Rock Energy Center - Petrochem Refinery Off-site Alternative



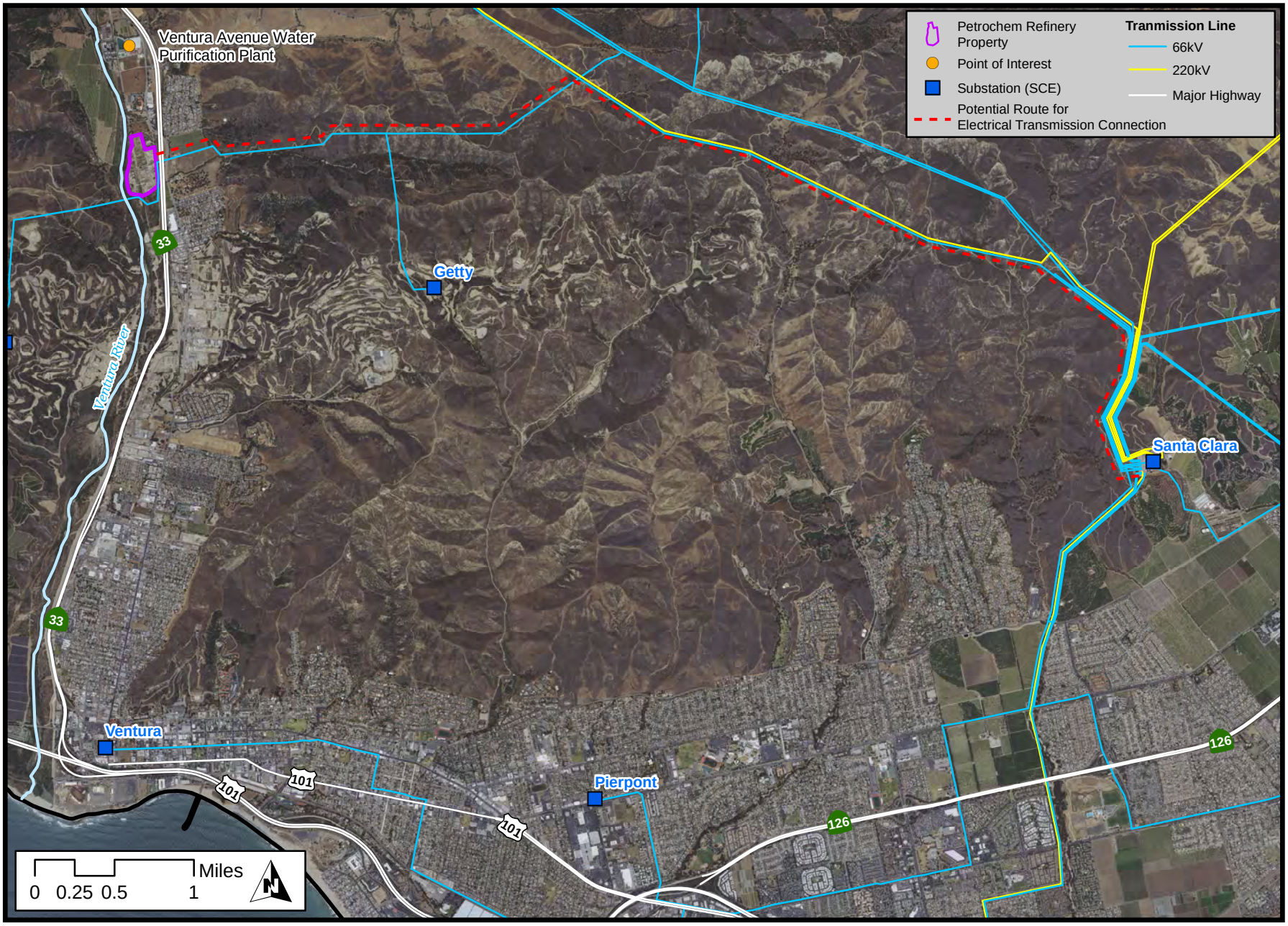
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: Adapted from Calpine 2015, USDA NAIP Imagery 2016, City of Buenaventura and Psomas 2002

ALTERNATIVES - FIGURE 4

Mission Rock Energy Center - Potential Transmission Connection for the Petrochem Refinery Off-site Alternative



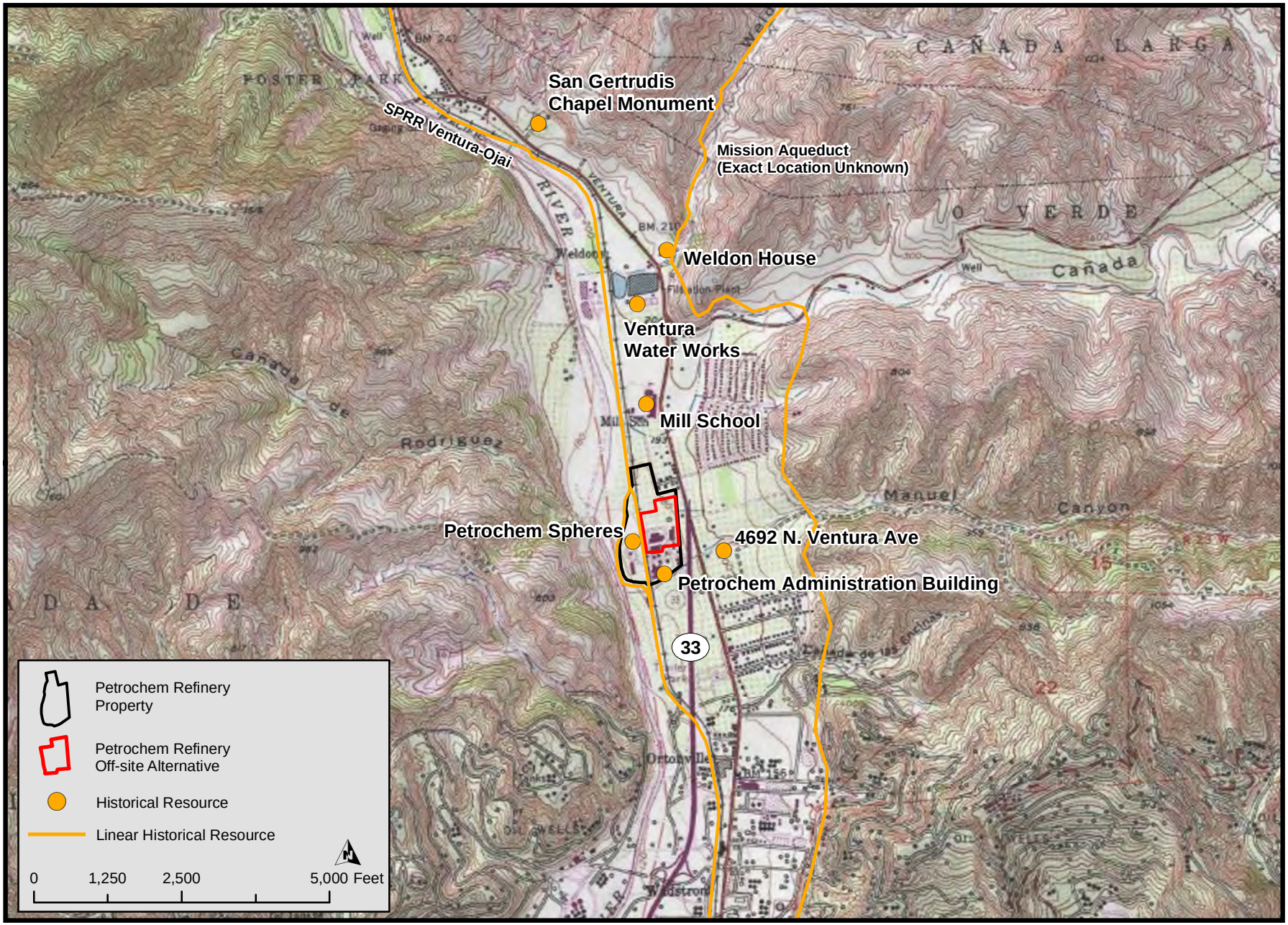
CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from Calpine 2015, USDA NAIP Imagery 2016

ALTERNATIVES

ALTERNATIVES - FIGURE 5

Mission Rock Energy Center - Petrochem Refinery Off-Site Alternative Built Environment Historical Resources



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: Adapted from Calpine 2015, USGS TOPO

ALTERNATIVES

ALTERNATIVES - FIGURE 6

Mission Rock Energy Center - View Southwest toward the Petrochem Refinery Off-site Alternative from Southbound SR 33

ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Google Earth Street View- May 2015

ALTERNATIVES - FIGURE 7

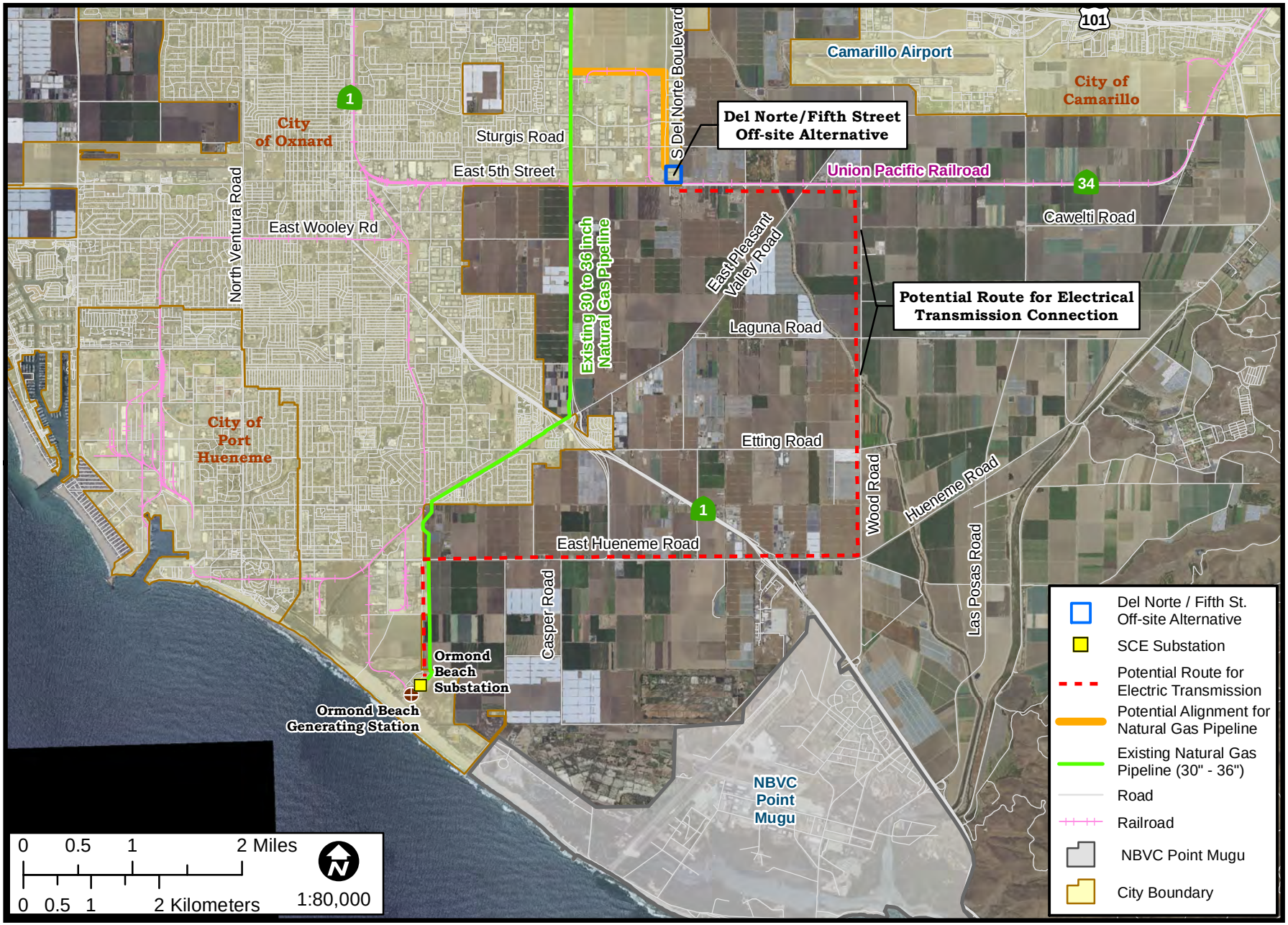
Mission Rock Energy Center - View Northwest toward the Petrochem Refinery Off-site Alternative from Northbound SR 33

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission staff

ALTERNATIVES - FIGURE 8

Mission Rock Energy Center - Del Norte/Fifth Street Off-site Alternative Region



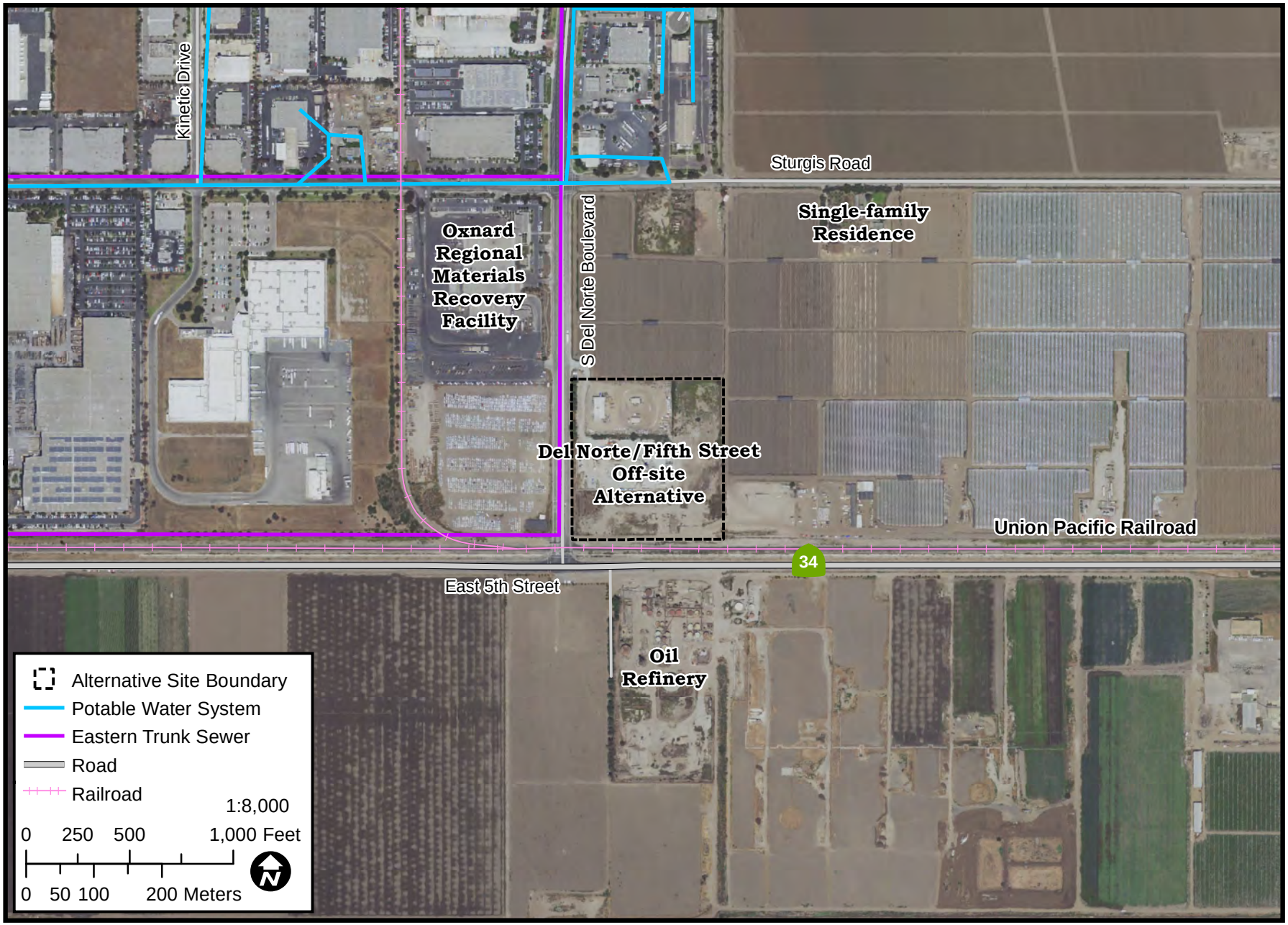
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: USDA NAIP Imagery 2016, California Department of Transportation 2016, OpenStreetMap 2016, ESRI

ALTERNATIVES - FIGURE 9

Mission Rock Energy Center - Del Norte/Fifth Street Off-site Alternative



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: USDA NAIP Imagery 2016, California Department of Transportation Data, City of Oxnard Planning & Environmental Services 2006

ALTERNATIVES

ALTERNATIVES - FIGURE 10

Mission Rock Energy Center - View North toward the Del Norte/Fifth Street Off-site Alternative from E. Fifth Street

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 11

Mission Rock Energy Center - View South along S. Del Norte Boulevard toward E. Fifth Street

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 12

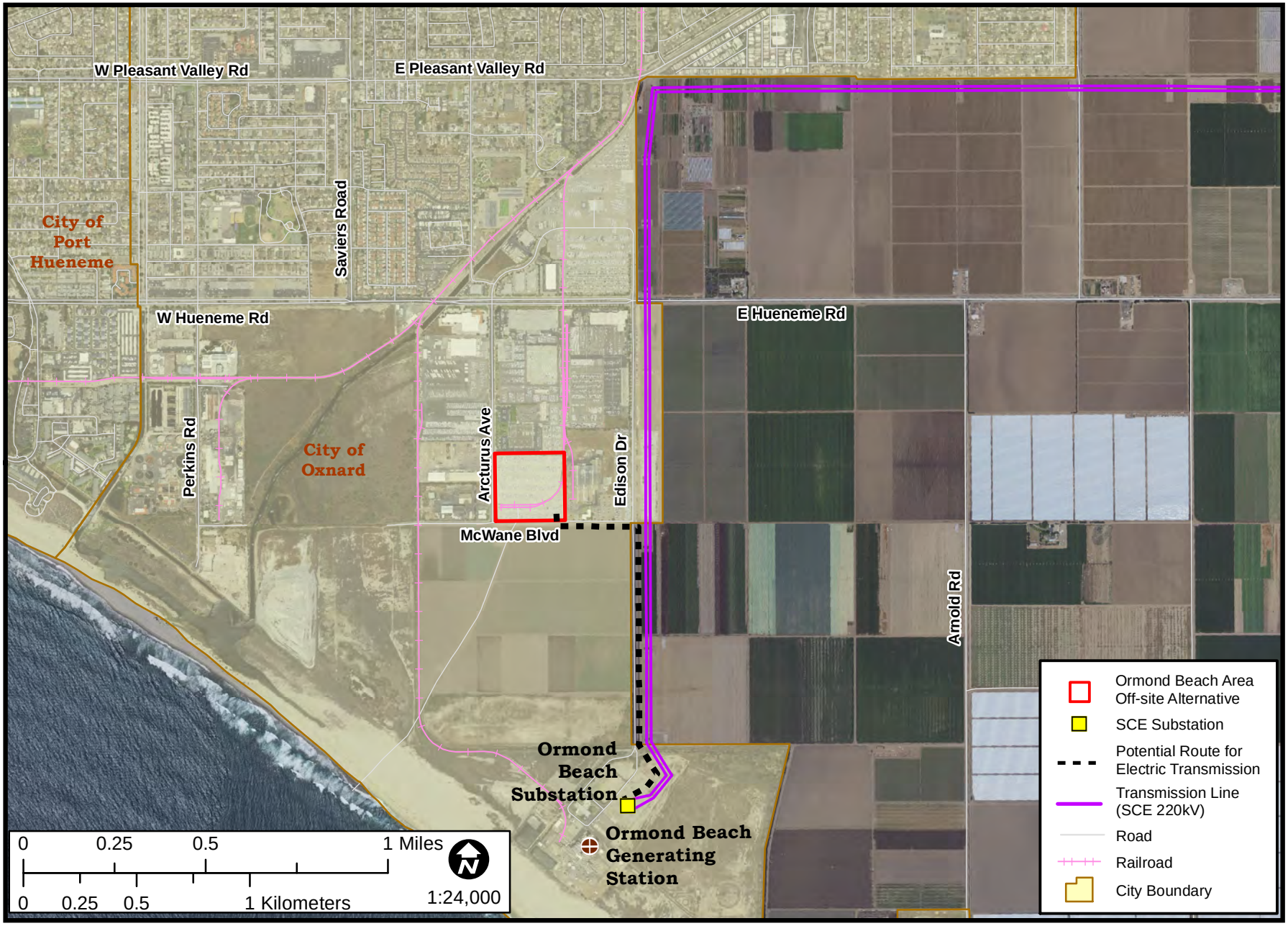
Mission Rock Energy Center - View Northwest from E. Pleasant Valley Road toward the Del Norte/Fifth Street Off-site Alternative

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 13

Mission Rock Energy Center - Ormond Beach Area Off-site Alternative Region



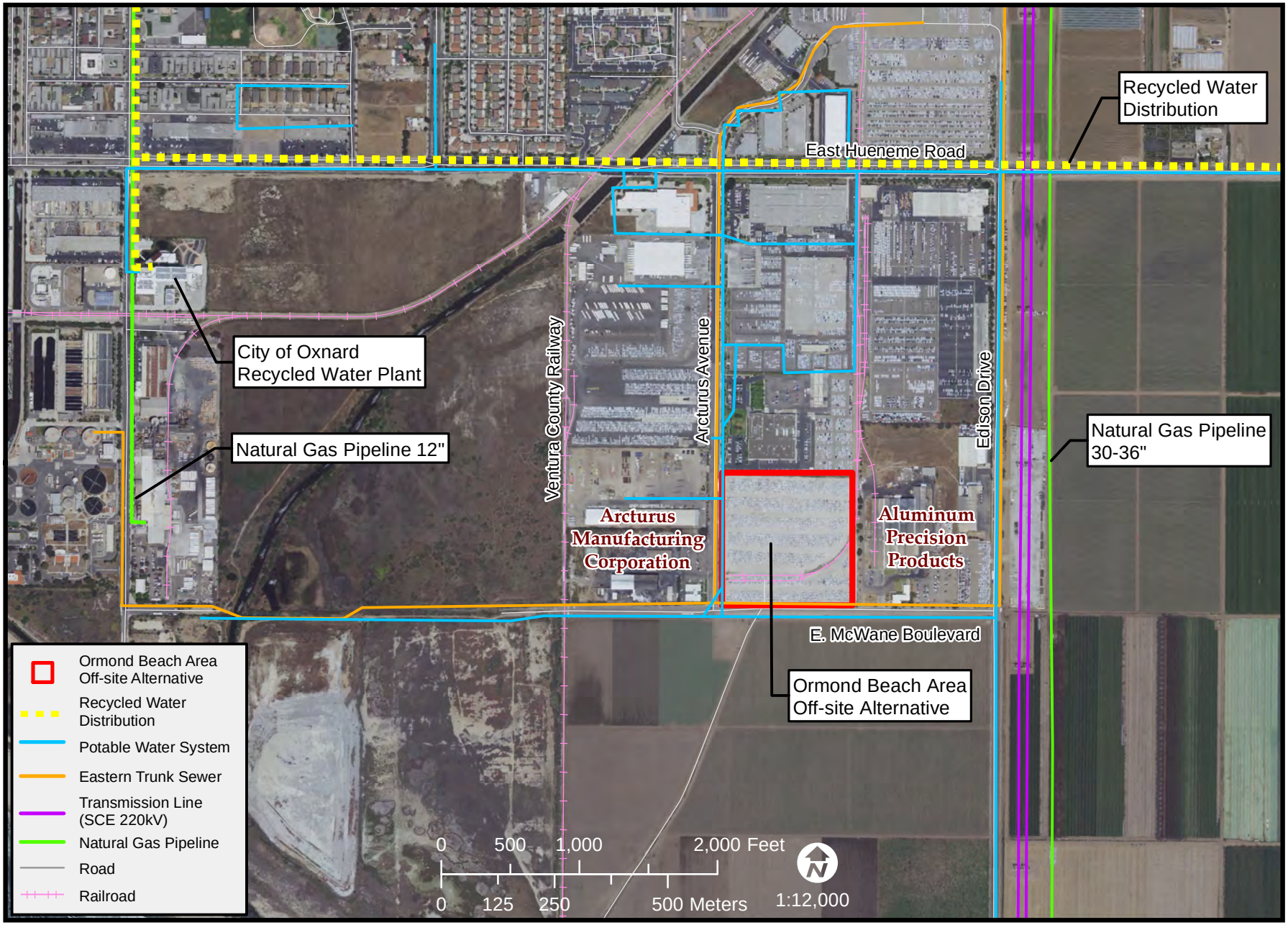
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: USDA NAIP Imagery 2016, California Department of Transportation 2016, OpenStreetMap 2016

ALTERNATIVES - FIGURE 14

Mission Rock Energy Center - Ormond Beach Area Off-site Alternative



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: USDA NAIP Imagery 2016, OpenStreetMap 2016, City of Oxnard Planning & Environmental Services 2006

ALTERNATIVES - FIGURE 15

Mission Rock Energy Center - Ormond Beach Restoration Study Area

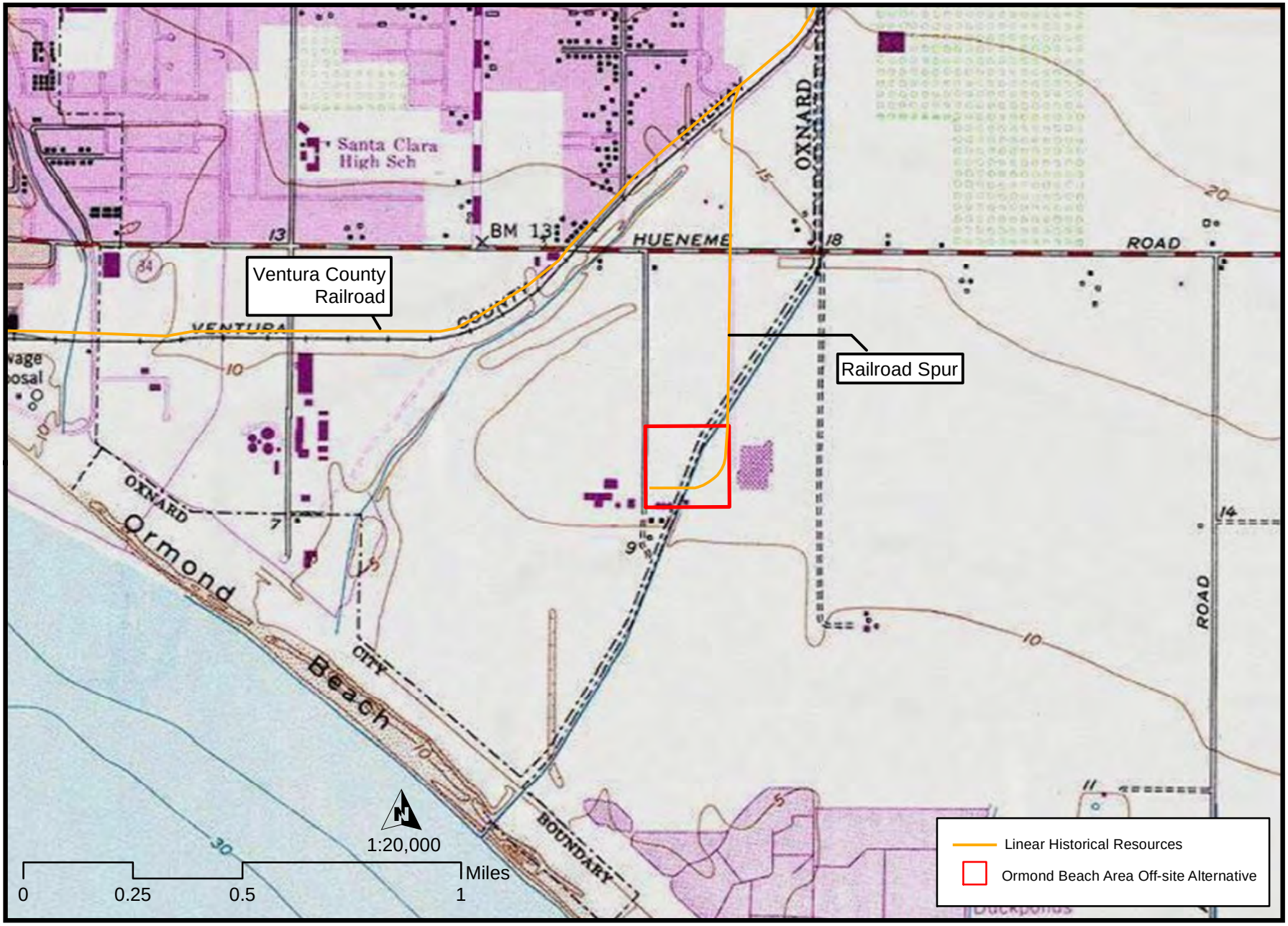
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: USDA NAIP Imagery 2016, WRA Environmental Consultants 2007, BING Aerial 2010, and ESRI

ALTERNATIVES - FIGURE 16

Mission Rock Energy Center - Ormond Beach Area Off-site Alternative Built Environment Historical Resources



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff, U.S. Geological Survey 7.5 minute topographic map; Oxnard, CA; 1949, Photo Revised 1967

ALTERNATIVES - FIGURE 17

Mission Rock Energy Center - View Northeast toward the Ormond Beach Area Off-site Alternative from Arcturus Avenue

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 18

Mission Rock Energy Center - View East along E. McWane Boulevard from the Railroad Tracks West of Arcturus Avenue

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 19

Mission Rock Energy Center - View South toward the Ormond Beach Generating Station from Arcturus Avenue

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 20

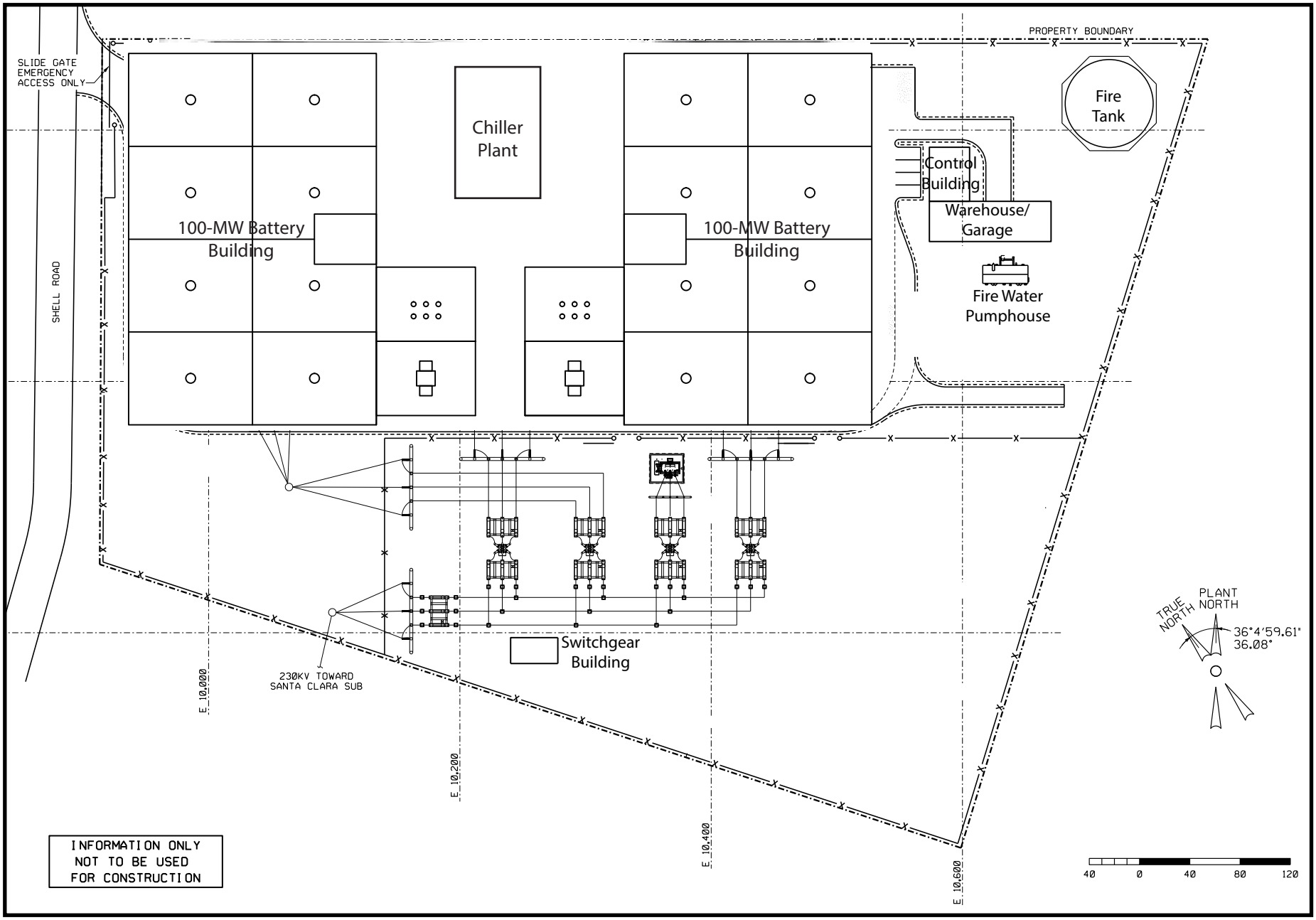
Mission Rock Energy Center - View Southeast from the Residential Neighborhood at Villa Cesar Chavez

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Energy Commission Staff

ALTERNATIVES - FIGURE 21

Mission Rock Energy Center - Conceptual Site Arrangement for the Battery Energy Storage Alternative



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Adapted from Calpine 2015 and City of Long Beach 2016

ALTERNATIVES APPENDIX-1: STAFF CONTRIBUTORS TO THE COMPARATIVE ANALYSIS OF ALTERNATIVES FOR MISSION ROCK

This appendix lists staff responsible for specific technical analyses in the **Alternatives** section of this staff assessment. Staff names are listed with their area of expertise.

Technical Area	Staff
Air Quality and Greenhouse Gas Emissions	Joseph Hughes, P.E. Gerry Bemis, P.E. Matthew Layton, P.E. David Vidaver
Biological Resources	Andrea Stroud Jon Hilliard
Cultural Resources	Thomas M. Gates, Ph.D. Matthew Braun Sean DeCourcy
Environmental Resources	Eric Knight, Environmental Office Manager
Geology and Paleontology	Garry Maurath, Ph.D., P.G., C.HG. Paul Marshall, P.G., C.E.G., C.HG.
Hazardous Materials Management	Alvin Greenberg, Ph.D. Geoff Lesh, P.E.
Land Use and Agricultural Resources	Lisa Worrall Steven Kerr
Noise and Vibration	Shahab Khoshmashrab, P.E.
Power Plant Engineering	Matthew Layton, P.E. Shahab Khoshmashrab, P.E. Edward Brady, P.E.
Public Health	Obed Odoemelam, Ph.D. Gerry Bemis, P.E.
Socioeconomics and Environmental Justice Demographics	Lisa Worrall Steven Kerr
Soil and Water Resources	Marylou Taylor, P.E.
Traffic and Transportation	Scott Polaske Jonathan Fong
Transmission System Engineering	Laiping Ng Mark Hesters
Visual Resources	William Kanemoto Jonathan Fong
Waste Management	Obed Odoemelam, Ph.D. Paul Marshall, P.G., C.E.G., C.HG.
Worker Safety and Fire Protection	Alvin Greenberg, Ph.D. Geoff Lesh, P.E.

ALTERNATIVES APPENDIX-2: ENVIRONMENTAL JUSTICE ANALYSIS FOR THE MISSION ROCK OFF-SITE ALTERNATIVES

Lisa Worrall[15]

The **Environmental Justice** section of this staff assessment discusses California's state policy requirements for decision-makers to consider environmental justice (EJ) if their actions could cause impacts on the environment. This appendix provides EJ analyses for the off-site alternatives.

DEMOGRAPHIC SCREENING

Similar to staff's analysis for the proposed project, staff considered the potential impacts on the EJ populations residing within six miles of the Petrochem Refinery, Del Norte/Fifth Street, and Ormond Beach Area off-site alternatives, and whether any impacts would disproportionately affect the EJ populations.

The **Environmental Justice** section of this staff assessment explains the demographic screening methodology used to determine the presence of an EJ population. Staff identifies an EJ population based on race and ethnicity when one or more U.S. Census blocks in the six-mile radius have a minority population greater than or equal to 50 percent. Staff identifies an EJ population based on low income when there is a comparatively larger population within the six-mile radius living below the federal poverty level or enrolled in the free or reduced price meal program at school compared to a larger reference statistical area.

CALENVIROSCREEN – MORE INFORMATION ABOUT AN EJ POPULATION

California Communities Environmental Health Screening Tool: CalEnviroScreen Version 3.0 (CalEnviroScreen) is a tool used by the California Environmental Protection Agency (Cal EPA) to identify disadvantaged communities pursuant to Senate Bill (SB) 535. As required by SB 535, disadvantaged communities are identified based on geographic, socioeconomic, public health and environmental hazard criteria. Cal EPA defines disadvantaged communities as the top 25 percent of all census tracts (75 percentile) (CalEPA 2017). CalEnviroScreen assesses communities at the census tract level in California to identify the communities most burdened by pollution from multiple sources and most vulnerable to its effects, taking into account socioeconomic characteristics and underlying health status (OEHHA 2017). The CalEnviroScreen score derived for a given place is relative to other places in the state. The **Environmental Justice** section of this staff assessment has more information about CalEnviroScreen, include limitations of this tool and the pollution burden and population characteristics contributing to the overall CalEnviroScreen score.

[15] Refer to the end of this section for a list of staff who contributed to the Environmental Justice analysis for the Mission Rock Off-site Alternatives.

Project impacts in the five technical areas of Air Quality, Public Health, Soil and Water Resources, Traffic and Transportation, and Waste Management could combine with the CalEnviroScreen indicators. When any one of these technical area has identified impacts that could combine with any of the indicators that make up the CalEnviroScreen score, staff in the affected technical areas assess the CalEnviroScreen data and other data specific to the project alternative. For these areas, staff considers where impacts from the alternative would potentially occur and the extent to which that area is currently burdened. With this combined information, the staff then assesses the extent of the alternative's impact on these disadvantaged communities and whether, or how, the alternative would impact the population.

PETROCHEM REFINERY OFF-SITE ALTERNATIVE

DEMOGRAPHIC SCREENING FOR THE PETROCHEM REFINERY OFF-SITE ALTERNATIVE

Alternatives Appendix 2 - Figure 1 (using a 1-, 3-, and 6-mile radius) shows that the population residing in the area of the Petrochem Refinery Off-site Alternative constitutes an EJ population based on race and ethnicity as defined by the federal guidance document, Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (US EPA 2016).

Staff used the school meal program enrollment data for the Ventura Unified School District to determine the relative low income levels within the six-mile radius and used the combined school districts in Ventura County as the reference geography. **Alternatives Appendix 2 - Table 1** shows the percent of students receiving free or reduced price meals in the local school district compared to the county. Staff concludes that when compared to the school meal program enrollment data for the county, the Ventura Unified School District has a comparable percentage of students receiving free or reduce price meals compared to the county and thus are not considered EJ populations based on low income. **Alternatives Appendix 2 - Figure 2** presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, there is no EJ population present based on a low income population.

Alternatives Appendix 2 - Table 1
Low Income Data within the Petrochem Refinery Off-site Alternative Area

SCHOOL DISTRICTS IN SIX-MILE RADIUS	Enrollment Used for Meals	Free or Reduced Price Meals	
Ventura Unified School District	17,125	7,698	45.0%
REFERENCE GEOGRAPHY			
Ventura County	140,567	69,320	49.3%

Source: CDE 2017

CALENVIROSCREEN RESULTS FOR THE PETROCHEM REFINERY OFF-SITE ALTERNATIVE

Alternatives Appendix 2 - Figure 1 presents the minority data at the census block geographic level and marks the census tract boundaries of the tracts identified in CalEnviroScreen as disadvantaged communities. The census block is the lowest-level census geographic entity (statistical area). By layering the minority data at the census block level with the census tract boundaries identified as disadvantaged communities, the minority block level data shows the census blocks where people live. Areas within the census tract boundaries without any shading are areas without residences. The size of the census block correlates with the number of residents in the block; the same is true of census tracts. For example, the smaller the census block or tract, the more densely populated that block or tract is. Likewise, the larger the block or tract, the less densely populated the block or tract is.

Alternatives Appendix 2 - Figure 1 shows that the closest residences to the Petrochem Refinery Off-site Alternative within a disadvantaged census tract are northeast of the intersection of North Ventura Avenue and Dakota Drive, a little over one mile south of this site.

Alternatives Appendix 2 - Table 2 presents the CalEnviroScreen data for the disadvantaged community census tracts in a six-mile radius of the Petrochem Refinery Off-site Alternative site. Where percentiles for CalEnviroScreen indicators are 90 and above, the percentile is shown in bold. These relatively higher percentiles could be seen as drivers for the census tract's identification as a disadvantaged community. Both disadvantaged census tracts have percentiles above 90 for pesticides. One of the two census tracts has indicators in both the pollution burdens and population characteristics groups of indicators with percentiles above 90.

Alternatives Appendix 2 - Table 2
CalEnviroScreen Scores for Disadvantaged Communities by Census tract in the Petrochem Refinery Off-site Alternative Six-Mile Radius [1]

Census Tract Number		6111002300	6111002400
Total Population		7,430	2,571
CES 3.0 Percentile [2]		78.48	78.09
CES 3.0 Percentile Range		76-80	76-80
Ozone	PERCENTILES	53.02	53.02
PM 2.5		40.92	40.92
Diesel PM		28.82	50.53
Drinking Water		36.02	36.01
Pesticides		**97.44**	**97.06**
Toxic Release		15.09	15.47
Traffic		42.45	73.41
Cleanup Sites		85.37	85.13
Groundwater Threats		89.18	83.96
Hazardous Waste		92.86	25.76
Impaired Water Bodies		41.15	41.15
Solid Waste		32.80	50.44
POLLUTION BURDEN		78.74	81.75
Asthma		60.14	60.14
Low Birth Weight		34.03	**98.92**
Cardiovascular Disease		63.35	63.35
Education		82.36	43.69
Linguistic Isolation		84.22	45.65
Poverty		77.75	60.30
Unemployment		56.83	28.77
Housing Burden		57.74	51.90
POPULATION CHARACTERISTICS		68.23	65.14

Notes: [1] Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the site. [2] Overall CalEnviroScreen score percentile. Indicators with percentiles that are shown as bold text are in the 90 percentile or higher.
Source: OEHHA 2017

POTENTIAL IMPACTS OF THE PETROCHEM REFINERY OFF-SITE ALTERNATIVE ON THE EJ POPULATION

The following describes potential impacts of this project alternative on the EJ population. Impacts relating to Air Quality, Public Health, Soil and Water Resources, Traffic and Transportation, and Waste Management could combine with the indicators that make up the CalEnviroScreen score.

Air Quality

The overall CalEnviroScreen score evaluates multiple pollutants and factors collectively; therefore, staff examined individual contributions of indicators that are relevant to air quality: ozone and PM2.5 (see **Alternatives Appendix 2 - Table 2** for indicator scores).

The Petrochem Refinery Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative would be located within the jurisdiction of the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality attainment status of criteria pollutants is the same for the alternative site and the Mission Rock site, and the same air quality laws, ordinances, regulations and standards (LORS) pertain to this off-site alternative.

Under the Petrochem Refinery Off-site Alternative, approximately 275 megawatts (MWs) of natural gas-fired generation would be constructed and operated at the alternative site. It is expected that construction related air quality impacts for the Petrochem Refinery Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, numbers, and types of equipment used would be similar for the construction at both sites. The Petrochem Refinery Off-site Alternative is surrounded by similar, complex topography as the Mission Rock site. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of similar mitigation measures that would be recommended under the proposed project.

The census tracts located within a six-mile radius of the Petrochem Refinery Off-site Alternative are census tract numbers 6111002300 and 6111002400. Staff concludes that the air quality impacts of a power plant similar to Mission Rock at the alternative site could be reduced to less than significant (see **Alternatives Table 1**). To evaluate ozone, staff used CalEnviroScreen data; the factor for determining an indicator score is the mean of summer months (May-October) of the daily maximum 8-hour ozone concentration (ppm), averaged over three years (2012 to 2014). According to CalEnviroScreen data for the three-year period, ozone concentrations in the disadvantaged census tracts within the six-mile radius of the alternative site were all below the 8-hour ozone health based standard of 0.070 ppm. Similarly, to determine the contribution of PM2.5 to the indicator score of a disadvantaged census tract,

CalEnviroScreen uses the annual mean concentration of PM2.5 (average of quarterly means, µg/m^3), over three years (2012 to 2014). According to the data, PM2.5 concentrations in the disadvantaged census tracts within the six-mile radius of the Petrochem Refinery Off-site Alternative were all below the annual mean PM2.5 health-based ambient air quality standard of 12 µg/m^3. Therefore, neither ozone, nor PM2.5 concentrations currently affect EJ populations in these disadvantaged census tracts. If a power plant similar to the proposed Mission Rock were built at this alternative site, according to VCAPCD and staff analyses, neither ozone, nor PM2.5 ambient concentrations would increase beyond these standards. For this reason, ozone and PM2.5 precursor emissions for a power plant similar to Mission Rock at the alternative site would not individually or cumulatively contribute to disproportionate ozone or PM2.5 air quality impacts on the EJ population in these census tracts.

Air quality impacts for all criteria pollutants, including ozone and PM2.5, would not cause adverse impacts on EJ populations, as presented in **Alternatives Appendix 2 – Figure 1**, and all impacts would be considered less than significant with implementation of mitigation measures.

Public Health

The overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors; therefore, staff examined the individual contributions of indicators that relate to public health. These individual contributors and their respective scores are presented in **Alternatives Appendix 2 - Table 2** as follows: particulate matter (PM), pesticide exposure, low birth weight, toxic substance releases, cardiovascular disease, and asthma. The pollutants of focus in this public health analysis are those known as toxic air pollutants (non-criteria pollutants) which have no air quality standards. These pollutants differ from criteria pollutants which have air quality standards and are addressed in the **Air Quality** section of this assessment.

Since the Petrochem Refinery Off-site Alternative is located within the same air mixing basin (the South Coast Air Basin) as Mission Rock and the project would be built and operated the same way at both the Mission Rock and this alternative site, the emitted pollutants would be similar around both sites. Staff concluded from its public health analysis in the **Public Health** section of this assessment that the proposed construction and operational plan would produce toxic emissions below levels of health significance.

Staff considered how this alternative would impact the EJ population in a six-mile radius of this alternative site, and considered the data from the indicators that relate to public health for the two disadvantaged community census tracts located within a six-mile radius of the Petrochem Refinery site. **Alternatives Appendix 2 - Figure 1** presents the EJ population based on a minority population and the location of the two disadvantaged community census tracts within the six-mile radius. The health stressors of concern are discussed separately.

- **Diesel PM:** This indicator represents how much diesel particulate matter (PM) is emitted into the air. The data are from California Air Resources Board's 2012 emission data from on-road vehicles (trucks and buses) and off-road sources (ships and trains, for example).

  Census tract 6111002300 has a relatively low level of diesel PM at the 28.82 percentile, compared with the other census tracts in California. A 28.82 percentile means that approximately 71 percent of the census tracts in California have higher levels of diesel PM. Census tract 6111002400 has an average level of diesel PM at the 50.53 percentile, compared with other the census tracts in California. The diesel PM emitted from the project (either from the diesel-fueled equipment during construction/demolition or from emergency equipment undergoing weekly readiness testing during operation) would not have any incremental impacts of cumulative significance on the identified EJ population, or a contribution of cumulative significance to the existing diesel PM levels in the disadvantaged community census tracts. Staff's conclusions are based on the following; (1) the locations of maximum impacts from these activities are usually within the project boundaries (construction/demolition impacts) or on the project boundary (operational impacts), (2) the impacts decrease rapidly as the diesel PM is transported from the site, (3) the closest residences in a disadvantaged community census tract are one mile from this alternative site, and (4) the closest EJ population would be across the road from this alternative site, but is not in a disadvantaged community census tract.

- **Pesticide Use:** Because many farmlands and farming activities are located in this area, the scores for pesticides use for many census tracts in this region are relatively high. This indicator represents the reported use of 70 hazardous and volatile pesticides in 2012 to 2014 collected by the California Department of Pesticide Regulation. Only pesticides used on agricultural commodities are included in the indicator. Please note that this indicator does not measure exposure, only proximity to use (i.e. it uses pounds per acre as a surrogate for exposure levels). Therefore, it only presents potential exposure, not actual exposure to pesticides. The percentiles for the two disadvantaged community census tracts are 97.44 and 97.06, meaning that approximately 3 percent of the census tracts in California have higher pesticide levels than these two census tracts. Staff believes that the toxic air emissions and pesticide application (to manage landscaping) from this alternative would not significantly add to these existing levels of pesticide use in the two disadvantaged community census tracts or add to any related health impacts on the identified EJ population at levels of cumulative significance.

- **Toxic Releases from Facilities:** The indicator represents modeled air concentration of chemical releases from large facility emissions in and nearby a particular census tract. The U.S. Environmental Protection Agency provides public information on the amount of chemicals released into the environment from many facilities. This indicator uses the toxicity-weighted concentrations of modeled chemical releases to air from facility emissions and off-site incineration. The data are averaged over 2011 to 2013.

Census Tract 6111002300 has a percentile of 15.47 for the toxic release indicator, and census tract 6111002400 has a percentile of 15.09. This means that approximately 85 percent of the census tracts in California have higher toxic release scores. Staff anticipates that toxic air pollutants emitted from operation of this alternative would be below levels of health

significance, and would not have any incremental impacts of cumulative significance on the identified EJ population, or a contribution of cumulative significance to the existing air toxin levels in the two disadvantaged community census tracts.

- **Asthma:** This indicator is a representation of asthma rates. It measures the number of emergency department visits for asthma per 10,000 people, spatially-modeled and age-adjusted, over the years 2011 to 2013. Emergency department visitation rates do not capture the full incidents of asthma in a community because not everyone with asthma requires emergency care. The information was collected by the California Office of Statewide Health Planning and Development. The asthma percentiles for the two identified census tracts are the same, at 60.14. Approximately 40 percent of the census tracts in California have higher incidents of asthma than these two disadvantaged community census tracts. Asthmatics are usually more sensitive to environmental pollutants than the public in general and are considered in setting the health-protective limits on environmental pollutants, as noted in staff's Public Health analysis. Asthma rates are a good indicator of population sensitivity to environmental stressors because asthma is both caused by and worsened by pollutants. There is considerable uncertainty about the causes and triggers of asthma and the societal factors responsible for the differing rates among population groups. Given existing knowledge and the results of staff's public health analysis, staff does not expect the emissions from Mission Rock to significantly add to existing asthma rates, as operated from the Mission Rock location or the Petrochem Refinery Off-site Alternative location, including the identified EJ population and the two disadvantaged community census tracts. For more detailed discussion regarding the existing asthma concern, please refer to staff's **Public Health Appendix A** in the **Public Health** section of this staff assessment.
- **Low Birth Weight Infants:** This indicator represents the percent of low birth weight babies and specifically measures the percentage of babies born weighing less than 2,500 grams (about 5.5 pounds) out of the total number of live births over the years 2006 to 2012. The information was collected by the California Department of Public Health. The low birth rate percentiles for the two census tracts are 98.92 and 34.03 reflecting the range of the prevalence difference as compared with the other census tracts in California. These low-weight babies are more sensitive to the effects of air pollution than normal-weight babies. As previously noted, staff's health risk assessment (HRA) for Mission Rock was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population.

As explained previously, staff anticipates similar HRA results from Mission Rock operated at the Petrochem Refinery site. According to the results of the HRA, the potential risk from the toxic pollutants of concern is below the health-based threshold. This risk would be similar for the Petrochem Refinery site. Therefore, the toxic emissions from the project would not contribute significantly to health effects for the low birth weight infants in the identified EJ population and the two disadvantaged community census tracts.

- **Cardiovascular Disease**: This indicator represents the spatially-modelled and age-adjusted rates for emergency department visits for acute myocardial infarction (commonly known as a heart attack), averaged over 2011 to 2013. The information was collected by the California Office of Statewide Health Planning and Development. There are many risk factors for developing cardiovascular disease, including diet, lack of exercise, smoking, and air pollution. Short-term exposure to air pollution, specifically particulate matter, has been shown to increase the risk of cardiovascular mortality shortly following a heart attack. There is also growing evidence that long-term exposure to air pollution may result in premature death for people who have had a heart attack. Also, the effects of air pollution on cardiovascular disease may be more pronounced in the elderly and those with pre-existing health conditions. The percentiles for both census tracts are the same at 63.35. As noted in the **Public Health** section of this assessment, individuals with cardiovascular disease are more sensitive to the effects of chemical exposure than the general public. Also, exposure limits for environmental pollutants are set based on the most sensitive individuals. Staff does not expect project emissions to adversely affect those who have already had a heart attack or adversely affect those who are at an increased risk for cardiovascular disease. This includes the identified EJ population and the two disadvantaged community census tracts.

EJ population impacts stems from the finding that such populations are sometimes exposed to environmental pollutants at much higher levels than the population in general. Staff concludes from the above analysis that public health impacts from the toxic pollutants of specific concern from the Petrochem Refinery off-Site Alternative would occur below levels of health significance for the general public and the identified EJ population, as represented in **Alternatives Appendix 2 – Figure 1**. Also, this alternative would not contribute significantly to the indicators related to public health in the two disadvantaged community census tracts.

Soil and Water Resources

The overall CalEnviroScreen score evaluates multiple pollutants and factors collectively. Three of the environmental indicators are relevant to soil and water resources: drinking water contaminants, groundwater threats, and impaired water bodies. This section compares risks and impacts on the EJ populations with respect to the risks and impacts on the overall population within the vicinity of the project area.

Drinking Water

The City of Ventura relies solely on local water sources including surface and groundwater from Lake Casitas, Ventura River, three groundwater basins, and recycled water. CalEnviroScreen's score for Groundwater Threats is based on the number of storage tanks that are leaking pollutants on land or underground, the type and status of the cleanup sites, and the distance to the census tract. The score for Drinking Water Contaminants is based on the concentration of selected contaminants found in the potable water system(s) of the census tracts. Within the six-mile radius of this off-site alternative, the Drinking Water scores are not directly related to the Groundwater Threats score. As shown in **Alternatives Appendix 2 - Table 2**, two disadvantaged communities have a high Groundwater Threat score (in the 89 and 84 percentiles) but a relatively good Drinking Water score (both in the 36 percentile).

Low income and rural communities, particularly those served by small community water systems, can be disproportionately exposed to contaminants in their drinking water. Assuming the quantity and quality of generated wastewater of this off-site alternative is acceptable for disposal to the municipal sewer system, these wastewater discharges would not contribute to groundwater threats or to the quality of the area's drinking water.

Water Quality of the Ventura River

The Impaired Water Bodies score is based on the number of pollutants in nearby water bodies listed as impaired (exceeds established standards) and the water bodies' distance to the census tract. The two disadvantaged communities both have scores in the 41 percentile due to their distance to the Ventura River. CalEnviroScreen data indicate that this section of the Ventura River is impaired due to the amount of algae detected.

The off-site alternative could potentially contribute sediment from water runoff during project construction or from storm water runoff during normal operations, but it would not contribute any additional amounts of algae to the Ventura River or constituents that would significantly stimulate growth of algae.

Flooding Risks

Although CalEnviroScreen does not evaluate flood risks, disadvantaged communities could be disproportionately impacted. The ability to remain safe or evacuate high-risk areas during a flood event is largely affected by factors such as quality of residential structures, access to transportation, availability of emergency supplies, effective service by emergency responders, and exposure to environmental hazards. This off-site alternative would not cause these communities to flood nor exacerbate flood impacts during a flood event and, therefore, would not contribute to flooding impacts.

Summary Conclusion

The Petrochem Refinery Offsite Alternative would not contribute to flooding impacts or exacerbate the existing impairments of the Ventura River. Potential impacts on drinking water supplies would be mitigated to less than significant with implementation of appropriate conditions of certification. These mitigated impacts on the EJ populations, as presented in **Alternatives Appendix 2 – Figure 1**, would be less than significant and would not be disproportionate.

Traffic and Transportation

Project-generated traffic in the area of the Petrochem Refinery Off-site Alternative would be expected to occur along Crooked Palm Road and North Ventura Avenue, which provide direct access to the alternative site from U.S. Route 101, where there are no disadvantaged communities (see **Alternatives Appendix 2 - Figure 1**). Further south from the alternative site, along State Route 33 and US 101, two disadvantaged community census tracts are present; 6111002300 and 6111002400. The traffic density percentile for census tract 6111002300 is 42.45 and census tract 6111002400 is 73.41 (**Alternatives Appendix 2 - Table 2**), meaning that approximately 58 and 27 percent of the census tracts in California have higher traffic density levels than these two census tracts.

Traffic density is an indicator included in the score for pollution burden and is calculated for each census tract and displayed as a percentile weighed against the traffic density for all other census tracts in California. The score for traffic density is not an indicator of acceptable level of service (LOS) on roadways, which is the typical criterion used to determine traffic impacts. The traffic density score is included in the score for pollution burden and is represented as the number of vehicles (adjusted by road segment lengths in kilometers) per hour per kilometer of roadways within the buffered census tract (OEHHA 2017). Thus, an increase of mobile emissions (increase in traffic density) appears to be the rationale and focus of this indicator. Traffic density would influence the background level of traffic-related pollutants in a specified area. Traffic is a significant source of air pollution, particularly in urban areas. These pollutants are measured and monitored by nearby air pollution monitoring stations. The pollutants that are specifically addressed in the **Air Quality** section of this staff document are those pollutants for which there are specific air quality standards.

The ones that are addressed in the **Public Health** section are those for which there are no specific air quality standards. In the **Air Quality** section of this staff document, staff uses the highest local background ambient air concentrations from the last three years (2014-2016) as the baseline for analyzing potential ambient air quality impacts for the proposed project. In order to demonstrate compliance with ambient air quality standards, the modeled impacts from the project were added to hourly background concentrations conservatively derived from the measured ambient levels, which include emissions from mobile sources.

Additionally, as part of the CalEnviroScreen analysis staff evaluated whether the two census tracts near the Petrochem Refinery are disproportionately disadvantaged by

background concentrations of ozone and PM2.5, which include emissions from mobile sources (either directly emitted or through secondary formation) and is a reflection of traffic density. It was determined that both ozone and PM2.5 background concentrations were well below their respective standards based on the CalEnviroScreen data and criterion. Therefore, neither ozone, nor PM2.5 concentrations currently affect EJ populations in these disadvantaged census tracts.

Vehicle emissions contain a number of pollutants including nitrogen oxides, carbon monoxide, and benzene. Negative health effects associated with increased exposure to these pollutants. For the **Public Health** staff analysis, the effects of focus are the cancer and non-cancer effects from long-term or short-term exposure to these toxic pollutants or air toxics. These non-cancer effects include heart and lung disease, and increased mortality (OEHHA 2017). The measured levels should be seen as part of normal background levels as contributed by vehicles and other sources. The related cancer and non-cancer burden for any given area is established by comparing these measured levels with the significance levels as established for each toxicant by staff and the regulatory agencies.

Implementation of a Traffic Control Plan (**TRANS-2**) would ensure to the greatest extent feasible that the traffic generated by this off-site alternative would not travel on smaller local roads within the identified disadvantaged census tracts but rather on the highway which runs adjacent to the disadvantaged communities, as project trucks are directed to take truck routes unless infeasible. Furthermore, project construction and operations traffic would likely take the most direct route to their destination, instead of driving through neighborhoods. Traffic during project operations would be negligible.

Staff's recommended conditions of certification for the Mission Rock project, including **TRANS-2** to implement a Traffic Control Plan and **TRANS-3** to restore all public roads/easements/rights-of-way, would be appropriate mitigation measures to reduce traffic and transportation impacts of the Petrochem Refinery Off-site Alternative to less than significant for the population in general, including the EJ population represented in **Alternatives Appendix 2 - Figure 1**.

The majority of potential traffic impacts of this off-site alternative would be associated with construction. The operation phase of the project would generate a very small number of on-site worker trips and routine delivery and maintenance trips.

A traffic impact that could disproportionately affect an EJ population is if the project were to affect public transportation. As minority and low income people are more likely to rely on such transportation, disruption from the project to public transportation, such as the need for route detours, would likely disproportionately affect an EJ population. As traffic from the off-site alternative would not significantly impact LOS, this alternative is not likely to affect public transportation, and thus would not have a disproportionate impact on the EJ population.

Waste Management

Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions of indicators as they relate to waste management, which is the process by which facility wastes are handled and disposed of in an environmentally sound manner. The wastes of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of waste depends on the hazardous ranking of its constituent materials. Existing LORS ensure the desired handling and disposal of waste materials without potential public or environmental health impacts. The CalEnviroScreen scores for the Petrochem Refinery Off-site Alternative are presented in **Alternatives Appendix 2 - Table 2** at the census tract level for each of the following environmental stressors: toxic releases from facilities, cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

The applicant described the methods for handling, transporting and disposing of all project wastes without significant impacts; whether there were any known contaminated soils and groundwater at the site, and listed the available disposal capacity of solid waste facilities that could accept project waste in accordance with applicable LORS. The same waste management method would be applied to the Mission Rock project if located at this alternative. Staff concludes from the Mission Rock waste management analysis that the proposed waste management plan would be adequate to ensure waste handling without significant environmental impacts and staff has recommended nine conditions of certification to ensure implementation. As waste management for Mission Rock would be the same for this alternative location, the environmental impacts would be similar. **Alternatives Appendix 2 - Figure 1** presents the EJ population based on a minority population and the location of the two disadvantaged community census tracts within a six-mile radius of the Petrochem Refinery site. The health stressors of concern are discussed separately as follows:

- **Toxic Releases from Facilities:** This indicator represents the background levels of toxic substances as released from area sources. Specifically, toxicity-weighted concentrations of modeled chemical releases to the air from facility emissions and off-site incineration. The data are averaged over 2011 to 2013 by the US Environmental Protection Agency using a computer-based screening tool, Risk Screening Environmental Indicators. At 15.47 and 15.09, the percentiles for the two disadvantaged census tracts are similar in reflecting their relative rankings among all of California's census tracts. Such toxic releases could pose a risk of cancer or non-cancer effects as discussed in the HRA in staff's **Public Health** section of this assessment. The proposed facility would be licensed as a hazardous waste generator at any of the sites being considered. Therefore, the applicant would be required to comply with LORS ensuring safe storage and disposal of hazardous wastes of concern. As previously discussed, staff regards the waste management for Mission Rock and associated impacts would be similar for the Petrochem Refinery Off-site Alternative.

Thus the applicant's waste management plan at this alternative site would be adequate for compliance on site and at the disposal sites, and waste handling and disposal would not pose a significant health risk to the identified EJ population. This alternative's waste management would not significantly contribute to the existing toxic releases in the two disadvantaged community census tracts. Also, if contaminated soils were encountered during construction the conditions of certification would ensure they were remediated in accordance with applicable LORS. Remediation, if necessary, would reduce the burden on the EJ population.

- **Cleanup Sites:** This indicator reflects the number of cleanup sites including Superfund sites on the National Priorities List and the Department of Toxic Substances Control (DTSC) EnviroStor database. The EnviroStor data management system tracks cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. The data was downloaded in December 2016. It also reflects the size and pollutant contribution of each site, and the distance to the census tract of focus. Remediation of any site is required to occur through specific LORS with the environmental risks increasing with the number of facilities. At a percentile of 85.37 and 85.13, there are approximately 15 percent of census tracts in California with more cleanup sites than these two census tracts. Staff concludes from its review that the applicant's management plan would be adequate to prevent site contamination at the Mission Rock site or at the Petrochem Refinery site that could affect the identified EJ population, including preventing an incremental contribution of significance that would add to the number of existing facilities in need of cleanup in the two disadvantaged community census tracts.
- **Hazardous Waste Generators and Facilities:** This indicator reflects the number of weighted permitted hazardous waste facilities and hazardous waste generators based on the DTSC EnviroStor hazardous waste database and hazardous waste tracking system from 2012 to 2014. As with the Mission Rock site, the project at the Petrochem Refinery site would be licensed as a hazardous waste generator and would be required to comply with LORS ensuring safe handling and disposal of hazardous wastes. The percentiles for these two census tracts are 25.76 and 92.86 and reflect the disparity in the distribution of hazardous waste sites and generators at the census tract level. Staff has included specific conditions of certification to ensure implementation of the related management plan as proposed by the applicant and concludes that, if constructed and operated at the Petrochem Refinery site, this alternative's toxic air emissions would not significantly add to the area's pollutant burden. Staff considers this alternative's toxic air emissions would not have a significant impact on the identified EJ population or the two disadvantaged community census tract.

- **Solid Waste Sites and Facilities:** This indicator reflects the number of facilities available for waste segregation for re-use or appropriate disposal. The data is as of December 2016.

  The percentiles for the two census tracts are 32.80 and 50.44 respectively. The applicant proposes to utilize only solid waste facilities that are verified to be in compliance with current LORS. There would be no increase in the number of solid waste generators given the adequacy of the available handling and disposal space as discussed by the applicant. Staff's related conditions of certification are intended to ensure compliance and avoid the need for additional facilities and related impacts on the environment. As staff considers the construction and operation of Mission Rock would be carried out the same if located at the Petrochem Refinery site, the impacts of the project would be similar at both sites. Staff considers that this alternative's waste disposal would not significantly add to the solid waste facilities, and thus not impact the identified EJ population or the two disadvantaged community census tracts.

Staff concludes from the above assessment that impacts from the Petrochem Refinery Off-site Alternative's waste management, both for on-site and off-site disposal, would occur below levels of health significance and these effects would not significantly contribute to impacts on the identified EJ population, as represented in **Alternatives Appendix 2 – Figure 1,** or the two disadvantaged community census tracts.

Other Technical Areas

Staff recommends conditions of certification to reduce potential environmental impacts of the proposed project relating to Hazardous Materials Management, Noise and Vibration, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management. With implementation of similar mitigation measures, potentially significant environmental impacts of the Petrochem Refinery Off-site Alternative on populations in the area of this off-site alternative, including the EJ population, could be reduced to less than significant. Socioeconomics staff concludes that the project impacts would be less than significant and therefore would have less-than-significant impacts on populations in a six-mile radius of the Petrochem Refinery Off-site Alternative, including the EJ population. Staff concludes that environmental impacts from the Petrochem Refinery Off-site Alternative would not disproportionately impact the EJ population living in this alternative's six-mile radius.

Cultural Resources staff considers impacts on Native American populations. Staff reviewed the ethnographic literature and historic literature to determine whether any Native American populations use or reside in the Petrochem Off-Site Alternative area, and concluded that the available information suggests no such groups use or reside in this area. Staff also walked the boundaries of the property in March 2017 in an attempt to identify potential areas that could be used by contemporary Native American groups for hunting or gathering activities. The entirety of the site is denuded of most native vegetation except for weeds, likely precluding any hunting or gathering on the site, but it is possible the Ventura River corridor adjacent to the site could be used for this purpose.

Because project-related consultation with California Native American tribes is on-going, staff does not have sufficient information to determine if Native Americans are members of an EJ population for this alternative, and if so, whether there would be impacts, disproportionate or otherwise, on Native American populations. Thus whether Native Americans are members of an EJ population and whether there would be impacts are not known at this time but a conclusion will be reached for the Final Staff Assessment.

DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

DEMOGRAPHIC SCREENING FOR THE DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

Alternatives Appendix 2 Figure 3 (using a 1-, 3-, and 6-mile radius) shows that the population residing in the area of the Del Norte/Fifth Street Off-site Alternative constitutes an EJ population based on race and ethnicity (minority) as defined by the federal guidance document, *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (US EPA 2016).

Staff used the Census County Divisions (CCDs) of Camarillo and Oxnard and the Mesa Union Elementary School District to determine the relative low income levels within the six-mile radius and the used Ventura County as the reference geography.

Alternatives Appendix 2 - Figure 4 presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, the shaded areas indicate the boundaries in which a low income population resides. **Alternatives Appendix 2 - Table 3** shows the percentages of population living below the federal poverty level in the six-mile radius and the comparative data for the county and the percent of students enrolled in the free or reduced price meal program. Staff concludes that when compared to the poverty data for the county, the Oxnard CCD has a higher percentage of people living below the poverty level than the county, and thus the below-poverty-level population is considered an EJ population based on a low income population.

Alternatives Appendix 2 - Table 3
Low Income and Poverty Data within the
Del Norte/Fifth Street Off-site Alternative Area

Census County Divisions in a Six-Mile Radius	Total Population [1]	Population Below Poverty Level	Percent Below Poverty Level (%)
	Estimate	Estimate	Estimate
Camarillo	67,415 ± 664	4,398 ± 887	6.5% ± 1.3
Oxnard	236,983 ± 913	38,916 ± 2,405	16.4% ±1.0
Reference Geography			
Ventura County	829,904 ± 849	91,880 ± 3,133	11.10% ± 0.4
School Districts in a Six Mile Radius	**Enrollment Used for Meals**	**Free or Reduced Price Meals**	
Mesa Union Elementary	1,276	401	31.4%
Reference Geography			
Ventura County	139,118	71,455	51.4%

Notes: [1] Population for whom poverty is determined. Staff's analysis of the 2011–2015 estimates returned coefficient of variation values less than 15, indicating the data is reliable.

Sources: U.S. Census 2015 and CDE 2017

CALENVIROSCREEN RESULTS FOR THE DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE

Alternatives Appendix 2 - Figure 3 presents the minority data at the census block geographic level and marks the census tract boundaries of the tracts identified in CalEnviroScreen as disadvantaged communities. The census block is the smallest census geographic entity (statistical area). Areas within the census tract boundaries without any shading are areas without residences. The size of the census block correlates with the number of residents in the block; the same is true of census tracts. For example, the smaller the census block or tract, the more densely populated that block or tract is. Likewise, the larger the block or tract, the less densely populated the block or tract is.

Alternatives Appendix 2 - Figure 3 shows that the closest residence to the Del Norte/Fifth Street Off-site Alternative within a disadvantaged census tract is on Sturgis Road, just east of S. Del Norte Boulevard, approximately 0.3 mile northwest of the site. There are a few scattered houses within a disadvantaged census tract, approximately 0.6 mile east of the site on the south side of E. Fifth Street at S. Wolff Road, and extending south. The closest residential development in a disadvantaged census tract is approximately 1.5 miles northwest of the site at the intersection of Santa Lucia Avenue and Kohala Street. There are a few scattered residences south of E. Fifth Street along the east side S. Rice Avenue and north side of E. Pleasant Valley Road, with the closest residence approximately 1 mile southwest of the site. This figure indicates there are one or more residences at the corner of Rice Avenue and W.

Fifth Street; however, after reviewing Google Earth aerial images taken before the 2010 census and then reviewing a current aerial, the residence that was near this intersection before 2010 has since been removed.

Alternatives Appendix 2 - Table 4 presents the CalEnviroScreen data for the disadvantaged community census tracts in a six-mile radius of the Del Norte/Fifth Street Off-site Alternative site. There are a total of six disadvantaged community census tracts in the six-mile radius. Where percentiles for CalEnviroScreen indicators are 90 and above, the percentile is shown in bold. These relatively higher percentiles could be seen as drivers for the census tract's identification as a disadvantaged community. Three of the disadvantaged community census tracts have percentiles above 90 percent for pollution burden. Three of the disadvantaged community census tracts have percentiles above 90 percent for population characteristics. Five of the disadvantaged census tracts have percentiles above 90 for pesticides. Four of the disadvantaged census tracts have percentiles above 90 for asthma, cardiovascular disease, education, and linguistic isolation.

Alternatives Appendix 2 - Table 4

CalEnviroScreen Scores for Disadvantaged Communities by Census tract in the Del Norte/Fifth Street Off-site Alternative Six-Mile Radius [1]

Census Tract Number		6111004902	6111009100	6111004715	6111002905	6111003201	6111004704
Total Population		5,091	5,279	5,020	5,478	4,577	1,469
CES 3.0 Percentile [2]		95.86	95.23	83.26	89.39	81.15	77.34
CES 3.0 Percentile Range		96-100	96-100	81-85	86-90	81-85	76-80
Ozone	PERCENTILES	40.49	40.49	40.49	40.49	40.49	40.49
PM 2.5		40.92	40.92	40.92	40.92	40.92	40.92
Diesel PM		41.36	39.99	56.20	28.19	39.94	36.09
Drinking Water		64.41	30.02	85.21	72.68	30.02	87.16
Pesticides		**99.58**	**97.47**	**99.65**	**99.76**	77.87	**99.97**
Toxic Release		31.79	41.91	77.29	29.63	40.08	48.68
Traffic		68.53	35.05	17.28	38.49	46.35	31.71
Cleanup Sites		0	65.25	**96.28**	**91.81**	6.33	39.00
Groundwater Threats		54.62	**93.43**	89.18	**91.81**	32.03	67.64
Hazardous Waste		88.27	74.24	67.03	77.83	43.11	71.55
Impaired Water Bodies		**97.26**	0	80.63	**91.47**	0	**97.26**
Solid Waste		89.84	89.46	**93.19**	78.52	32.80	68.47
POLLUTION BURDEN		89.94	78.53	**97.96**	**93.88**	39.03	**90.98**
Asthma		**95.95**	**95.45**	29.40	**92.22**	**96.00**	30.69
Low Birth Weight		43.53	67.99	51.84	88.62	67.36	44.60
Cardiovascular Disease		**97.79**	**97.12**	26.03	**91.90**	**97.84**	27.69
Education		**99.23**	**96.29**	79.11	60.55	**99.84**	**93.49**
Linguistic Isolation		**97.89**	**90.65**	71.76	49.33	**99.16**	**91.92**
Poverty		**95.02**	**90.57**	70.94	33.75	**92.39**	68.98
Unemployment		36.77	**91.56**	60.55	15.84	82.00	56.83
Housing Burden		56.92	58.64	58.97	23.19	**99.34**	NA
POPULATION CHARACTERISTICS		**90.69**	**97.50**	52.89	70.74	**99.45**	55.42

Notes: [1] Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the site. [2] Overall CalEnviroScreen score percentile. Indicators with percentiles that are shown as bold text are in the 90 percentile or higher.

Source: OEHHA 2017

POTENTIAL IMPACTS OF THE DEL NORTE/FIFTH STREET OFF-SITE ALTERNATIVE ON THE EJ POPULATION

The following describes potential impacts of this project alternative on the EJ population. Impacts relating to Air Quality, Public Health, Soil and Water Resources, Traffic and Transportation, and Waste Management could combine with the indicators that make up the CalEnviroScreen score.

Air Quality

The overall CalEnviroScreen score evaluates multiple pollutants and factors collectively; therefore, staff examined individual contributions of indicators that are relevant to air quality: ozone and PM2.5 (see **Alternatives Appendix 2 - Table 4** for indicator scores).

The Del Norte/Fifth Street Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative would be located within the jurisdiction of the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality (attainment status of criteria pollutants) is the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

Under the Del Norte/Fifth Street Off-site Alternative, approximately 275 MWs of natural gas-fired generation would be constructed and operated at the alternative site. It is expected that construction related air quality impacts for the Del Norte/Fifth Street Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, numbers, and types of equipment used would be similar for the construction at both sites. The Del Norte/Fifth Street Off-site Alternative is located in less complex terrain compared to the Mission Rock site, which could result in lower operating impacts, but staff does not expect there to be significant differences between the two sites. Because the operational profile (equipment and hours of operation) of the power plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of similar mitigation measures that would be recommended under the proposed project.

The census tracts located within a six-mile radius of the Del Norte/Fifth Street Off-site Alternative are census tract numbers 6111004902, 6111009100, 6111004715, 6111002905, 6111003201, and 6111004704. Staff concludes that the air quality impacts of a power plant similar to Mission Rock at the alternative site could be reduced to less than significant (see **Alternatives Table 3**). To evaluate ozone, staff used CalEnviroScreen data; the factor for determining an indicator score is the mean of summer months (May-October) of the daily maximum 8-hour ozone concentration (ppm), averaged over three years (2012 to 2014). According to CalEnviroScreen data for the three-year period, ozone concentrations in the disadvantaged census tracts within the six-mile radius of the alternative site were all below the 8-hour ozone health based standard of 0.070 ppm.

Similarly, to determine the contribution of PM2.5 to the indicator score of a disadvantaged census tract, CalEnviroScreen uses the annual mean concentration of PM2.5 (average of quarterly means, $\mu g/m^3$), over three years (2012 to 2014). According to the data, PM2.5 concentrations in the disadvantaged census tracts within the six-mile radius of the Del Norte/Fifth Street Off-site Alternative were all below the annual mean PM2.5 health-based ambient air quality standard of 12 $\mu g/m^3$.

Therefore, neither ozone, nor PM2.5 concentrations currently affect EJ populations in these disadvantaged census tracts. If a power plant similar to the proposed Mission Rock were built at this alternative site, according to VCAPCD and staff analyses neither ozone, nor PM2.5 ambient concentrations would increase beyond these standards. For this reason, ozone and PM2.5 precursor emissions for a power plant similar to Mission Rock at the alternative site would not individually or cumulatively contribute to disproportionate ozone or PM2.5 air quality impacts on the EJ population in these census tracts.

Air quality impacts for all criteria pollutants, including ozone and PM2.5, would not cause adverse impacts on EJ populations as presented in **Alternatives Appendix 2 – Figure 3** and **Figure 4**, and all impacts would be considered less than significant with implementation of mitigation measures.

Public Health

The overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors; therefore, staff examined the individual contributions of indicators that relate to public health. These individual contributors and their respective scores are presented in **Alternatives Appendix 2 - Table 4** as follows: particulate matter (PM), pesticide exposure, low birth weight, toxic substance releases, cardiovascular disease, and asthma. The pollutants of focus in this public health analysis are those known as toxic air pollutants (non-criteria pollutants) which have no air quality standards. These pollutants differ from criteria pollutants which have air quality standards and are addressed in the **Air Quality** section of this assessment. Since the Del Norte/Fifth Street Off-Site Alternative is located within the same air mixing basin (the South Coast Air Basin) as Mission Rock, and the project would be built and operated the same way at both the Mission Rock and this alternative site, the emitted pollutants would be similar around both sites. Staff concluded from its public health analysis in the **Public Health** section of this assessment that the proposed construction and operational plan would produce toxic emissions below levels of health significance.

Staff considered how this alternative would impact the EJ population in a six-mile radius of this alternative site, and considered the data from the indicators that relate to public health for the six disadvantaged community census tracts located within a six-mile radius of the Del Norte/Fifth Street site. **Alternatives Appendix 2 - Figure 3** presents the EJ population based on a minority population and the location of the six disadvantaged community census tracts and **Alternatives Appendix 2 - Table 3** presents information on the area's EJ population based on a low income population within the six-mile radius.

Alternatives Appendix 2 – Figure 4 presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, the shaded areas indicate the boundaries in which a low income population resides. The health stressors of concern are discussed separately.

- **Diesel PM:** This indicator represents how much diesel particulate matter (PM) is emitted into the air. The data are from California Air Resources Board's 2012 emission data from on-road vehicles (trucks and buses) and off-road sources (ships and trains, for example). The percentiles for the six census tracts range from 28.19 to 56.20, reflecting the differences in their existing levels as compared to the rest of the census tracts in California. These percentiles mean that approximately anywhere from 72 percent to 44 percent of the census tracts in California have higher levels of diesel PM. The diesel PM emitted from the project (either from the diesel-fueled equipment during construction/demolition or from emergency equipment undergoing weekly readiness testing during operation) would not have any incremental impacts of cumulative significance on the identified EJ population or a contribution of cumulative significance to the existing diesel PM levels in the six disadvantaged community census tracts, even though the closest EJ population would be approximately 0.3 mile from the Del Norte/Fifth Street site and is in a disadvantaged community census tract. Staff's conclusions are based on the fact that the locations of maximum impacts for such activities are usually within the project boundaries or on the project boundary and the impacts decrease rapidly as the diesel PM is transported from the site.

- **Pesticide Use:** Because many farmlands and farming activities are located in this area, the scores for pesticide use for many census tracts in this region are relatively high. This indicator represents the reported use of 70 hazardous and volatile pesticides in 2012 to 2014 as collected by the California Department of Pesticide Regulation. Only pesticides used on agricultural commodities are included in the indicator. Please note that this indicator does not measure exposure, only proximity to use (i.e. it uses pounds per acre as a surrogate for exposure levels).

  Therefore, it only presents potential exposure, not actual exposure to pesticides. The percentiles for the six identified census tracts range from 77.87 to 99.97 meaning approximately anywhere from 22 percent to 0.03 percent of the census tracts in California have higher pesticide levels. Staff believes that the toxic air emissions and pesticide application (to manage landscaping) from this alternative would not significantly add to these existing levels of pesticide use in the six disadvantaged community census tracts or add to any related health impacts on the identified EJ population at levels of cumulative significance.

- **Toxic Releases from Facilities:** This indicator represents modeled air concentration of chemical releases from large facility emissions in and nearby a particular census tract.

The U.S. Environmental Protection Agency provides public information on the amount of chemicals released into the environment from many facilities. This indicator uses the toxicity-weighted air concentrations of modeled chemical releases to air from facility emissions and off-site incineration. The data are averaged over 2011 to 2013. The percentiles for the six identified census tracts range from 31.79 to 77.29 reflecting their ranking among the other census tracts in California regarding toxic emission levels. Approximately 68 percent to 23 percent of the census tracts in California are higher than these six census tracts. Staff anticipates that toxic emissions emitted from operation of this alternative would be encountered below levels of health significance and would not have any incremental impacts of cumulative significance on the EJ population, or a contribution of cumulative significance to the existing air toxin levels in the disadvantaged community census tracts.

- **Asthma:** This indicator is a representation of an asthma rate. It measures the number of emergency department visits for asthma, spatially-modeled and age-adjusted, per 10,000 people over the years 2011 to 2013. Emergency department visitation rates do not capture the full incidents of asthma in a community because not everyone with asthma requires emergency care. The information was collected by the California Office of Statewide Health Planning and Development. The asthma percentile for the six census tracts range from 29.4 to 96.0 percent meaning that the asthma emergency department visitation rate in other census tracts is 70.6 percent to 4 percent higher than these six census tracts. Asthma rates are a good indicator of population sensitivity to environmental stressors because asthma is both caused by and worsened by pollutants. There is much uncertainty about the causes and triggers of asthma and the societal factors responsible for the differing rates among population groups. Given existing knowledge and the results of staff's public health analysis, staff does not expect the emissions from Mission Rock to significantly add to existing asthma rates as operated from the Mission Rock site or the Del Norte/ Fifth Street site, including the identified EJ population and the six disadvantaged community census tracts. For more detailed discussion regarding the existing asthma concern, please refer to staff's **Public Health Appendix A** in the **Public Health** section of this staff assessment.
- **Low Birth Weight Infants:** This indicator represents the percent of low birth weight babies and specifically measures the percentage of babies born weighing less than 2,500 grams (about 5.5 pounds) out of the total number of live births over the years 2006 to 2012. The information was collected by the California Department of Public Health. The low birth rate weight percentiles for the six census tracts ranges from 43.53 to 88.62 reflecting the range of the prevalence in the considered area. Approximately 56 percent to 11 percent of the census tracts in California have a higher incidence of low birth weights. These low birth weight babies are more sensitive to the effects of air pollution than normal-weight babies. As previously noted, staff's HRA was based on a highly conservative health-protective methodology that accounts for pollutant impacts on the most sensitive individuals in a given population.

According to the results of this HRA for Mission Rock, the potential risk is below health-based thresholds. As explained previously, staff anticipates similar HRA results from Mission Rock operated at the Del Norte/Fifth Street site. Therefore, the toxic emissions from the project would not significantly contribute to health effects for the low birthweight babies in the identified EJ population and the six disadvantaged community census tracts.

- **Cardiovascular Disease:** This indicator represents the spatially-modelled and age-adjusted rates for emergency department visits for acute myocardial infarction (commonly known as a heart attack), averaged over 2011 to 2013. The information was collected by the California Office of Statewide Health Planning and Development. There are many risk factors for developing cardiovascular disease, including diet, lack of exercise, smoking, and air pollution. Short-term exposure to air pollution, specifically particulate matter, has been shown to increase the risk of cardiovascular mortality shortly following a heart attack. There is also growing evidence that long-term exposure to air pollution may result in premature death for people who have had a heart attack. Also, the effects of air pollution on cardiovascular disease may be more pronounced in the elderly and those with pre-existing health conditions. The percentiles in the six disadvantaged community census tracts range from 26.03 to 97.84 reflecting the large differences in prevalence among these six census tracts. As noted in the Public Health section of this assessment, individuals with cardiovascular disease are more sensitive to the effects of chemical exposure than the general public.

  Also, exposure limits for environmental pollutants are set based on the most sensitive individuals. Staff does not expect project emissions to adversely affect those who have already had a heart attack or adversely affect those who are at an increased risk for cardiovascular disease. This includes the identified EJ population and the six disadvantaged community census tracts.

EJ population impacts stems from the finding that such populations are sometimes exposed to environmental pollutants at much higher levels than the population in general. Staff concludes from the above analysis that public health impacts from the toxic air pollutants of specific concern from the Del Norte/Fifth Street Off-site Alternative would occur below levels of health significance for the general public and the identified EJ population, as represented in **Alternatives Appendix 2 – Figure 3** and **Figure 4**. Also, this alternative would not contribute significantly to the indicators related to public health in the six disadvantaged community census tracts**.**

Soil and Water Resources

The overall CalEnviroScreen score evaluates multiple pollutants and factors collectively. Three of the environmental indicators are relevant to soil and water resources: drinking water contaminants, groundwater threats, and impaired water bodies. This section compares risks and impacts on the EJ populations with respect to the risks and impacts on the overall population within the vicinity of the project area.

Drinking Water

The cities of Oxnard, Port Hueneme, and Camarillo all supply municipal potable water to their respective service areas by blending imported water with local groundwater. CalEnviroScreen's score for Groundwater Threats is based on the number of storage tanks that are leaking pollutants on land or underground, the type and status of the cleanup sites, and the distance to the census tract. The score for Drinking Water Contaminants is based on the concentration of selected contaminants found in the potable water system(s) of the census tracts. Within the six-mile radius of this off-site alternative, the Drinking Water scores are not directly related to the Groundwater

Threats score, as shown in **Alternatives Appendix 2 - Table 4**. The table shows the tract with the highest Groundwater Threat score in the 93 percentile also has the best Drinking Water score which is in the 30 percentile.

Low income and rural communities, particularly those served by small community water systems, can be disproportionately exposed to contaminants in their drinking water. Assuming the quantity and quality of generated wastewater of this off-site alternative is acceptable for disposal to the municipal sewer system, these wastewater discharges would not contribute to groundwater threats or to the quality of the area's drinking water.

Water Quality of the Revolon Slough and Agricultural Drains

Four of the six census tracks have very high scores, ranging from 81 to 97 percentile, due to their distance to impaired waters, such as Revolon Slough and agricultural drains in the area. The Impaired Water Bodies score is based on the number of pollutants in nearby water bodies listed as impaired (exceeds established standards) and the water bodies' distance to the census tract. The other two tracks score zero because of their distance.

CalEnviroScreen data indicate that the Revolon Slough, which is located about one mile east of the site, is impaired due to the presence of 16 identified pollutants that exceed established standards (including Dichlorodiphenyltrichloroethane [DDT], polychlorinated biphenyl [PCBs], and sedimentation). The off-site alternative could potentially contribute additional sediment from water runoff during project construction or from storm water runoff during normal operations. Although local LORS would require that all runoff impacts are less than significant, actual impacts are difficult to estimate especially without a site-specific drainage study to evaluate on-site drainage management. Staff expects impacts from this alternative would be low due to the annual rainfall of the area and the site's distance to the Revolon Slough.

Flooding Risks

Although CalEnviroScreen does not evaluate flood risks, disadvantaged communities could be disproportionately impacted. The ability to remain safe or evacuate high-risk areas during a flood event is largely affected by factors such as quality of residential structures, access to transportation, availability of emergency supplies, effective service by emergency responders, and exposure to environmental hazards.

This off-site alternative would not cause these communities to flood nor exacerbate flood impacts during a flood event and, therefore, would not contribute to flooding impacts.

Summary Conclusion

The Del Norte-Fifth Street Offsite Alternative would not contribute to flooding impacts. Potential impacts on drinking water supplies or on the water quality of nearby surface waters would be mitigated to less than significant with implementation of appropriate conditions of certification. These mitigated impacts on the EJ populations, as represented in **Alternatives Appendix 2 – Figure 3** and **Figure 4**, would be less than significant and would not be disproportionate.

Traffic and Transportation

Project-generated traffic in the area of the Del Norte/Fifth Street Off-site Alternative would be expected to occur along N. Del Norte Boulevard, which provides direct access to the alternative site from U.S. Route 101. The project alternative is located within an identified disadvantaged community census tract (see **Alternatives Appendix 2 - Figure 3)**. The traffic density percentile for census tract 6111004902 is 68.53. The access route to the project alternative site (N. Del Norte Boulevard) also borders the disadvantaged community census tract 6111004704. The traffic density percentile for this census tract is 31.71.

Traffic density is an indicator included in the scoring for pollution burden in the CalEnviroScreen tool and is calculated for each census tract and displayed as a percentile weighed against the traffic density for all other census tracts in California. The score for traffic density is not an indicator of acceptable level of service (LOS) on roadways, which is the typical criterion used to determine traffic impacts. Traffic density score is included in the score for pollution burden and is represented as the number of vehicles (adjusted by road segment lengths in kilometers) per hour per kilometer of roadways within the buffered census tract (OEHHA 2017). Thus, an increase of mobile emissions (increase in traffic density) appears to be the rationale and focus of this indicator. Traffic density would influence the background level of traffic-related pollutants in a specified area. Traffic is a significant source of air pollution, particularly in urban areas. These pollutants are measured and monitored by nearby air pollution monitoring stations. The pollutants that are specifically addressed in the **Air Quality** section of this staff document are those pollutants for which there are specific air quality standards. The ones that are addressed in the **Public Health** section are those for which there are no specific air quality standards. In the **Air Quality** section of this staff document, staff uses the highest local background ambient air concentrations from the last three years (2014 to 2016) as the baseline for analyzing potential ambient air quality impacts for the proposed project. In order to demonstrate compliance with ambient air quality standards, the modeled impacts from the project were added to hourly background concentrations conservatively derived from the measured ambient levels, which include emissions from mobile sources.

Additionally, as part of the CalEnviroScreen analysis staff evaluated whether the six census tracts near the Del Norte/Fifth Street Off-site Alternative are disproportionately disadvantaged by background concentrations of ozone and PM2.5, which include emissions from mobile sources (either directly emitted or through secondary formation) and is a reflection of traffic density. It was determined that both ozone and PM2.5 background concentrations were well below their respective standards based on the CalEnviroScreen data and criterion. Therefore, neither ozone, nor PM2.5 concentrations currently affect EJ populations in these disadvantaged census tracts.

Vehicle emissions contain a number of pollutants, including nitrogen oxides, carbon monoxide, and benzene. Negative health effects are associated with increased exposure to these pollutants. For the **Public Health** staff analysis, the effects of focus are the cancer and non-cancer effects from long-term or short-term exposure to these toxic pollutants or air toxics. These non-cancer effects include heart and lung disease, and increased mortality (OEHHA 2017). The measured levels should be seen as part of normal background levels as contributed by vehicles and other sources. The related cancer and non-cancer burden for any given area is established by comparing these measured levels with the significance levels as established for each toxicant by staff and the regulatory agencies.

Implementation of a Traffic Control Plan (**TRANS-2**) would ensure to the greatest extent feasible that the traffic generated by this off-site alternative would not travel on smaller local roads within the identified disadvantaged census tracts but rather on the highway which runs adjacent to the disadvantaged communities, as project trucks are directed to take truck routes unless infeasible. Furthermore, project construction and operations traffic would likely take the most direct route to their destination, instead of driving through neighborhoods. Traffic during project operations would be negligible.

Staff's recommended conditions of certification for the Mission Rock project, including **TRANS-2** to implement a Traffic Control Plan and **TRANS-3** to restore all public roads/easements/rights-of-way, would be appropriate mitigation measures to reduce traffic and transportation impacts of the Del Norte/Fifth Street Off-site Alternative to less than significant for the population in general, including the EJ population represented in **Alternatives Appendix 2 - Figure 3** and **Figure 4**.

The majority of potential traffic impacts of this off-site alternative would be associated with construction. The operation phase of the project would generate a very small number of on-site worker trips and routine delivery and maintenance trips. A disproportionate impact on an EJ population related to traffic could occur if a project would affect public transportation as minority and low income people are more likely to rely on such transportation. As traffic from the off-site alternative would not significantly impact LOS, this alternative is not likely to affect public transportation, and thus would not have a disproportionate impact on the EJ population.

Waste Management

Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions of indicators as they relate to waste management, which is the process by which facility wastes are handled and disposed of in an environmentally sound manner. The wastes of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of waste depends on the hazardous ranking of its constituent materials. Existing LORS ensure the desired handling and disposal of waste materials without potential public or environmental health impacts. The CalEnviroScreen scores for the Del Norte/Fifth Street Off-site Alternative are presented in **Alternatives Appendix 2 - Table 4** at the census tract level for each of the following environmental stressors: toxic releases from facilities, cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

The applicant described the methods for handling, transporting and disposing of all project wastes without significant impacts, whether there were any known contaminated soils and groundwater at the site, and listed the available disposal capacity of solid waste facilities that could accept project waste in accordance with applicable LORS. The same waste management method would be applied to the Mission Rock project if located at this alternative. Staff concludes from the Mission Rock waste management analysis that the proposed waste management plan would be adequate to ensure waste handling without significant environmental impacts and staff has recommended nine conditions of certification to ensure implementation. As waste management for Mission Rock would be the same for this alternative location, the environmental impacts would be similar. **Alternatives Appendix 2 - Figure 3** presents the EJ population based on a minority population and the location of the six disadvantaged community census tracts and **Alternatives Appendix 2 - Table 3** presents information on the area's EJ population based on a low income population within a six-mile radius of the Del Norte/Fifth Street site. **Alternatives Appendix 2 – Figure 4** presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, the shaded areas indicate the boundaries in which a low income population resides. The health stressors of concern are discussed separately as follows:

- **Toxic Releases from Facilities:** This indicator represents the background levels of toxic substances as released from area sources. Specifically, toxicity-weighted concentrations of modeled chemical releases to the air from facility emissions and off-site incineration.

  The data are averaged over 2011 to 2013 by the US Environmental Protection Agency using a computer-based screening tool, Risk Screening Environmental Indicators. The percentiles for the six disadvantaged community census tracts range from 29.63 to 77.29. Such toxic releases could pose a risk of cancer or non-cancer effects as discussed in the HRA in staff's **Public Health** section of this assessment.

The proposed facility would be licensed as a hazardous waste generator at any of the sites being considered. Therefore, the applicant would be required to comply with LORS ensuring safe storage and disposal of hazardous wastes of concern. As previously discussed, staff regards the waste management for Mission Rock and associated impacts would be similar for the Del Norte/Fifth Street Off-site Alternative. Thus the applicant's waste management plan at this alternative site would be adequate for compliance on site and at the disposal sites and waste handling and disposal would not pose a significant health risk to either the general public or the identified EJ population. This alternative's waste management would not significantly contribute to the existing toxic releases in the six disadvantaged community census tracts. Also, if contaminated soils were encountered during construction the conditions of certification would ensure they were, remediated in accordance with applicable LORS. Remediation, if necessary, would reduce the burden on the EJ population.

- **Cleanup Sites:** This indicator reflects the number of cleanup sites including Superfund sites on the National Priorities List and the Department of Toxic Substances Control (DTSC) EnviroStor database. The EnviroStor data management system tracks cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. The data was downloaded in December 2016. It also reflects the size and pollutant contribution of each site, and the distance to the census tract of focus. Remediation of any site is required to occur through specific LORS with the environmental risks increasing with the number of facilities. The percentiles for the six disadvantaged community census tracts range from 0 to 96.28. Staff concludes from its review that the applicant's management plan would be adequate to prevent site contamination at the Mission Rock site or at the Del Norte/Fifth Street site that could affect the identified EJ population, including preventing an incremental contribution of significance that would add to the number of existing facilities in need of cleanup in the six disadvantaged community census tracts.
- **Hazardous Waste Generators and Facilities:** This indicator reflects the number of weighted permitted hazardous waste facilities and hazardous waste generators based on the DTSC EnviroStor hazardous waste database and hazardous waste tracking system from 2012 to 2014. The EnviroStor data management system tracks cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. As with the Mission Rock site, the project at the Del Norte/Fifth Street site would be licensed as a hazardous waste generator and would be required to comply with LORS ensuring safe handling and disposal of hazardous wastes. The percentiles for these six census tracts range from 43.11 to 88.27 and reflect the disparity in the distribution of hazardous waste sites and generators at the census tract level.

Staff has included specific conditions of certification to ensure implementation of the related management plan as proposed by the applicant and concludes that, if constructed and operated at the Del Norte/Fifth Street site, this alternative's toxic air emissions would not significantly add to the area's pollutant burden. Staff considers this alternative's toxic air emissions would not have a significant impact on the identified EJ population or the six disadvantaged community census tract.

- **Solid Waste Sites and Facilities:** This indicator reflects the number of facilities available for waste segregation for re-use or appropriate disposal. The data is as of December 2016. The percentiles for the six census tracts range from 32.80 to 93.18. The applicant proposes to utilize only solid waste facilities that are verified to be in compliance with current LORS. There would be no increase in the number of solid waste generators given the adequacy of the available handling and disposal space as discussed by the applicant. Staff's related conditions of certification are intended to ensure compliance and avoid the need for additional facilities and related impacts on the environment. As staff considers the construction and operation of Mission Rock would be carried out the same if located at the Del Norte/Fifth Street site, the impacts of the project would be similar at both sites. Staff considers that this alternative's waste disposal would not significantly add to the solid waste facilities, and thus not impact the identified EJ population or the six disadvantaged community census tracts.

Staff concludes from the above assessment that impacts from the Del North/Fifth Street Off-site Alternative's waste management, both for on-site and off-site disposal, would occur below levels of health significance and these effects would not significantly contribute to impacts on the identified EJ population, as represented in **Alternatives Appendix 2 – Figure 3** and **Figure 4**, or the six disadvantaged community census tracts.

Other Technical Areas

Staff has recommended conditions of certification to reduce potential environmental impacts of the proposed project relating to Hazardous Materials Management, Noise and Vibration, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management. With implementation of similar mitigation measures, potentially significant environmental impacts of the Del Norte/Fifth Street Off-site Alternative on populations in the area of this off-site alternative, including the EJ population, could be reduced to less than significant. Socioeconomics staff concludes that the project impacts relating to this technical area would be less than significant and therefore would have less-than-significant impacts on populations in a six-mile radius of the Del Norte/Fifth Street Off-site Alternative, including the EJ population. Staff concludes that environmental impacts from the Del Norte/Fifth Street Off-site Alternative would not disproportionately impact the EJ population living in this alternative's six-mile radius.

Cultural Resources staff considers impacts on Native American populations. Staff reviewed the ethnographic literature and historic literature to determine whether any Native American populations use or reside in the Del Norte/Fifth Street Off-site Alternative area, and concluded that the available information suggests no such groups use or reside in this area. Satellite imagery of the alternative site from October 2016 indicates that most of the site has been graded or otherwise disturbed and is denuded of most native vegetation. The condition of the site would likely preclude any hunting or gathering on the proposed site by Native Americans. Because project-related consultation with California Native American tribes is on-going, staff does not have sufficient information to determine if Native Americans are members of an EJ population for this alternative, and if so, whether there would be impacts, disproportionate or otherwise, on Native American populations. Thus whether Native Americans are members of an EJ population and whether there would be impacts are not known at this time but a conclusion will be reached for the Final Staff Assessment.

ORMOND BEACH AREA OFF-SITE ALTERNATIVE

DEMOGRAPHIC SCREENING FOR THE ORMOND BEACH AREA OFF-SITE ALTERNATIVE

Alternatives Appendix 2 - Figure 5 (using a 1-, 3-, and 6-mile radius) shows that the population residing in the area of the Ormond Beach Area Off-site Alternative constitutes an EJ population based on race and ethnicity (minority) as defined by the federal guidance document, *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (US EPA 2016).

Staff used the Oxnard Census County Divisions (CCD) to determine the relative low income levels within the six-mile radius and Ventura County as the reference geography. **Alternatives Appendix 2 - Figure 6** presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, the shaded areas indicate the boundaries in which a low income population resides. **Alternatives Appendix 2 - Table 5** shows the percentages of population living below the federal poverty level in the six-mile radius and the comparative data for the county. Staff concludes that when compared to the poverty data for the county, the Oxnard CCD has a higher percentage of people living below the poverty level than the county and thus the below-poverty-level population is considered an EJ population based on a low income population.

Alternatives Appendix 2 – Table 5
Poverty Data within the Ormond Beach Area Off-site Alternative Area

	Total Population [1]	Population Below Poverty Level	Percent Below Poverty Level (%)
	Estimate	Estimate	Estimate
Census County Division in a Six-Mile Radius			
Oxnard	236,983 ± 913	38,916 ± 2,405	16.4 ±1.0
Reference Geography			
Ventura County	829,904 ± 849	91,880 ± 3,133	11.10 ± 0.4

Notes: 1 *Population* for whom poverty is determined. Staff's analysis of the 2011–2015 estimates returned coefficient of variation values less than 15, indicating the data is reliable.
Source: U.S. Census 2015

CALENVIROSCREEN RESULTS FOR THE ORMOND BEACH AREA OFF-SITE ALTERNATIVE

Alternatives Appendix 2 - Figure 5 presents the minority data at the census block geographic level and marks the census tract boundaries of the tracts identified in CalEnviroScreen as disadvantaged communities. The census block is the smallest census geographic entity (statistical area). Areas within the census tract boundaries without any shading are areas without residences. The size of the census block correlates with the number of residents in the block; the same is true of census tracts. For example, the smaller the census block or tract, the more densely populated that block or tract is. Likewise, the larger the block or tract, the less densely populated the block or tract is.

A review of **Alternatives Appendix 2 - Figure 5** shows that the closest residence within a disadvantaged community census track is a single home approximately 0.7 mile northeast of this alternative site on E. Hueneme Road, just east of Edison Drive. The closest residential development to the site in a disadvantaged community census tract is northeast of the site and extends south for the intersection of E Pleasant Valley Road and Etting Road. The closest residence east of this alternative within a disadvantaged community census track is approximately 1.2 miles away, just east of Arnold Road and south of E. Hueneme Road. This figure indicates there are one or more residences west of this alternative site, west of the railroad track and south of E. Hueneme Road; however, a review of the 2010 census population data and aerials taken before the 2010 census, and then reviewing a current aerial, there are no residences in either vintage aerial. The land is industrial and open space. It is possible that the decennial census data is incorrect or that at the time of the count, a small (52) transient population was counted as residing in this area.

Alternatives Appendix 2 - Table 6 presents the CalEnviroScreen data for the disadvantaged community census tracts in a six-mile radius of the Ormond Beach Area Off-site Alternative.

Where percentiles for CalEnviroScreen indicators are 90 and above, the percentile is shown in bold. These relatively higher percentiles could be seen as drivers for the census tract's identification as a disadvantaged community. Three of the census tracts in the six-mile radius have percentiles above 90 percent for population characteristics. All but one of the disadvantaged census tracts has percentiles above 90 for pesticides. Four disadvantaged community census tracts have percentiles above 90 for asthma, cardiovascular disease, education, and linguistic isolation.

Alternatives Appendix 2 -Table 6

CalEnviroScreen Scores for Disadvantaged Communities by Census tract in the Ormond Beach Area Off-site Alternative Six-Mile Radius [1]

Census Tract Number		6111004902	6111009100	6111004715	6111002905	6111003201	6111004704
Total Population		5,091	5,279	5,020	5,478	4,577	1,469
CES 3.0 Percentile [2]		95.86	95.23	83.26	89.39	81.15	77.34
CES 3.0 Percentile Range		96-100	96-100	81-85	86-90	81-85	76-80
Ozone	PERCENTILES	40.49	40.49	40.49	40.49	40.49	40.49
PM 2.5		40.92	40.92	40.92	40.92	40.92	40.92
Diesel PM		41.36	39.99	56.20	28.19	39.94	36.09
Drinking Water		64.41	30.02	85.21	72.68	30.02	87.16
Pesticides		**99.58**	**97.47**	**99.65**	**99.76**	77.87	**99.97**
Toxic Release		31.79	41.91	77.29	29.63	40.08	48.68
Traffic		68.53	35.05	17.28	38.49	46.35	31.71
Cleanup Sites		0	65.25	**96.28**	**91.81**	6.33	39
Groundwater Threats		54.62	**93.43**	89.18	**91.81**	32.03	67.64
Hazardous Waste		88.27	74.24	67.03	77.83	43.11	71.55
Impaired Water Bodies		**97.26**	0	80.63	**91.47**	0	**97.26**
Solid Waste		89.84	89.46	**93.19**	78.52	32.80	68.47
POLLUTION BURDEN		89.94	78.53	**97.96**	**93.88**	39.03	**90.98**
Asthma		**95.95**	**95.45**	29.40	**92.22**	**96.00**	30.69
Low Birth Weight		43.53	67.99	51.84	88.62	67.36	44.60
Cardiovascular Disease		**97.79**	**97.12**	26.03	**91.90**	**97.84**	27.69
Education		**99.23**	**96.29**	79.11	60.55	**99.84**	**93.49**

Census Tract Number		6111004902	6111009100	6111004715	6111002905	6111003201	6111004704
Linguistic Isolation		**97.89**	**90.65**	71.76	49.33	**99.16**	**91.92**
Poverty		**95.02**	**90.57**	70.94	33.75	**92.39**	68.98
Unemployment		36.77	**91.56**	60.55	15.84	82.00	56.83
Housing Burden		56.92	58.64	58.97	23.19	**99.35**	NA
POPULATION CHARACTERISTICS		**90.69**	**97.50**	52.89	70.74	**99.45**	55.42

Notes:[1] Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the site. [2] Overall CalEnviroScreen score percentile range. Indicators with percentiles that are shown as bold text are in the 90 percentile or higher.**Source**: OEHHA 2017

POTENTIAL IMPACTS OF THE ORMOND BEACH AREA OFF-SITE ALTERNATIVE ON THE EJ POPULATION

The following describes potential impacts of this project alternative on the EJ population. Impacts relating to Air Quality, Public Health, Soil and Water Resources, Traffic and Transportation, and Waste Management could combine with the indicators that make up the CalEnviroScreen score.

Air Quality

The overall CalEnviroScreen score evaluates multiple pollutants and factors collectively; therefore, staff examined individual contributions of indicators that are relevant to air quality: ozone and PM2.5 (see **Alternatives Appendix 2 -Table 6** for indicator scores).

The Ormond Beach Area Off-site Alternative is located in the same air basin as Mission Rock, the South Central Coast Air Basin. Mission Rock and this off-site alternative would be located within the jurisdiction of the same local air district, the Ventura County Air Pollution Control District (VCAPCD). The existing ambient air quality (attainment status of criteria pollutants) is the same for the alternative site and the Mission Rock site, and the same air quality LORS pertain to this off-site alternative.

Under the Ormond Beach Area Off-site Alternative, approximately 275 MWs of natural gas-fired generation would be constructed and operated at the alternative site. It is expected that construction related air quality impacts for the Ormond Beach Area Off-site Alternative would be **similar to Mission Rock** because the duration of construction activities, numbers, and types of equipment used would be similar for the construction at both sites. The Ormond Beach Area Off-site Alternative is located in less complex terrain compared to the Mission Rock site, which could result in lower operating impacts, but staff does not expect there to be significant differences between the two sites. Because the operational profile (equipment and hours of operation) of the power

plant would be the same at each of the sites, it is expected that air quality and greenhouse gas operating impacts for this alternative would likely be **similar to Mission Rock**. Potentially significant impacts on air quality could be reduced to less than significant with implementation of similar mitigation measures that would be recommended under the proposed project.

The census tracts located with a six-mile radius of the Ormond Beach Area Off-site Alternative are census tract numbers 6111004902, 6111009100, 6111004715, 6111002905, 6111003201, and 6111004704. Staff concludes that the air quality impacts of a power plant similar to Mission Rock at the alternative site could be reduced to less than significant (see **Alternatives Table 4**). To evaluate ozone, staff used CalEnviroScreen data; the factor for determining an indicator score is the mean of summer months (May-October) of the daily maximum 8-hour ozone concentration (ppm), averaged over three years (2012 to 2014). According to CalEnviroScreen data for the three-year period, ozone concentrations in the disadvantaged census tracts within the six-mile radius of the alternative site were all below the 8-hour ozone health based standard of 0.070 ppm. Similarly, to determine the contribution of PM2.5 to the indicator score of a disadvantaged census tract, CalEnviroScreen uses the annual mean concentration of PM2.5 (average of quarterly means, $\mu g/m^3$), over three years (2012 to 2014). According to the data, PM2.5 concentrations in the disadvantaged census tracts within the six-mile radius of the Ormond Beach Area Off-site Alternative were all below the annual mean PM2.5 health-based ambient air quality standard of 12 $\mu g/m^3$.

Therefore, neither ozone, nor PM2.5 concentrations currently affect EJ populations in these disadvantaged census tracts. If a power plant similar to the proposed Mission Rock were built at this alternative site, according to VCAPCD and staff analyses neither ozone, nor PM2.5 ambient concentrations would increase beyond these standards. For this reason, ozone and PM2.5 precursor emissions for a power plant similar to Mission Rock at the alternative site would not individually or cumulatively contribute to disproportionate ozone or PM2.5 air quality impacts on the EJ population in these census tracts.

Air quality impacts for all criteria pollutants, including ozone and PM2.5, would not cause adverse impacts on EJ populations, as represented in **Alternatives Appendix 2 – Figure 5** and **Figure 6**, and all impacts would be considered less than significant with implementation of mitigation measures.

Public Health

The overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors; therefore, staff examined the individual contributions of indicators that relate to public health. These individual contributors and their respective scores are presented in **Alternatives Appendix 2 - Table 6** as follows: particulate matter (PM), pesticide exposure, low birth weight, toxic substance releases, cardiovascular disease, and asthma.

The pollutants of focus in this public health analysis are those known as toxic air pollutants (or non-criteria pollutants) which have no air quality standards. These pollutants differ from criteria pollutants which have air quality standards and are addressed in the **Air Quality** section of this assessment.

Since the Ormond Beach Area Off-Site Alternative is located within the same air mixing basin (the South Coast Air Basin) as Mission Rock, and the project would be built and operated the same way at both the Mission Rock and this alternative site, the emitted pollutants would be similar around both sites. Staff concluded from its public health analysis in the **Public Health** section of this assessment that the proposed construction and operational plan would produce toxic emissions below levels of health significance.

Staff considered how this alternative would impact the EJ population in a six-mile radius of this alternative site, and considered the data from the indicators that relate to public health for the six disadvantaged community census tracts located within a six-mile radius of the Ormond Beach Area site. **Alternatives Appendix 2 - Figure 5** presents the EJ population based on a minority population and the location of the six disadvantaged community census tracts and **Alternatives Appendix 2 - Table 5** presents information on the area's EJ population based on a low income population within the six-mile radius. **Alternatives Appendix 2 – Figure 6** presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, the shaded areas indicate the boundaries in which a low income population resides. The health stressors of concern are discussed separately.

- **Diesel PM:** This indicator represents how much diesel PM is emitted into the air within and near the six identified disadvantaged community census tracts. The data are from California Air Resources Board's 2012 emission data from on-road vehicles (trucks and buses) and off-road sources (ships and trains, for example). The percentiles for the six identified disadvantaged community census tracts range from 28.19 to 56.20 reflecting the differences in the existing levels as compared to the rest of the census tracts in California. The diesel PM emitted from the project (either from the diesel-fueled equipment during construction/demolition or from emergency equipment undergoing weekly readiness testing during operation) would not have any incremental impacts of cumulative significance on the identified EJ population or a contribution of cumulative significance to the existing diesel PM levels in the six disadvantaged community census tracts even though the closest residences in a disadvantaged community census tract would be approximately 0.7 mile from the Ormond Beach Area Off-site Alternative. The locations of maximum impacts from such activities are usually within or at the project boundary.
- **Pesticide Use:** Because many farmlands and farming activities are located in this area, the scores for pesticide use for many census tracts in this region are relatively high. This indicator represents the reported use of 70 hazardous and volatile pesticides in 2012-2014 as collected by the California Department of Pesticide

  Regulation Only pesticides used on agricultural commodities are included in the indicator. Please, note that this indicator does not measure exposure, only proximity to use (i.e. it uses pounds per acre as a surrogate for exposure levels). Therefore, it

only presents potential exposure, not actual exposure to pesticides. The percentiles for the six disadvantaged community census tracts range from 77.87 to 99.97 meaning approximately 22 to 0.03 percent of the census tracts in California have higher pesticide levels. Staff believes that the toxic air emissions and pesticide application (to manage landscaping) from this alternative would not significantly add to these existing levels of pesticide use in the six disadvantaged community census tracts or add to any related health impacts on the identified EJ population at levels of cumulative significance.

- **Toxic Releases from Facilities**: This indicator represents modeled air concentration of chemical releases from large facility emissions in and nearby a particular census tract. The U.S. Environmental Protection Agency provides public information on the amount of chemicals released into the environment from many facilities. This indicator uses the toxicity-weighted air concentrations of modeled chemical releases to air from facility emissions and off-site incineration. The data are averaged over 2011 to 2013. The percentiles for the six identified census tracts range from 31.79 to 77.29 reflecting their ranking among the other census tracts in California regarding toxic emissions. Staff anticipates that the air toxic emissions from operation of this alternative would be encountered below levels of health significance and would not have any incremental impacts of cumulative significance on the identified EJ population, or a contribution of cumulative significance to the existing air toxin levels in the disadvantaged community census tracts.
- **Asthma:** This indicator is a representation of asthma rates. It measures the number of emergency department visits for asthma per 10,000 people, spatially-modeled and age-adjusted, over the years 2011 to 2013. Emergency department visitation rates do not capture the full incidents of asthma in a community because not everyone with asthma requires emergency care. The information was collected by the California Office of Statewide Health Planning and Development. The asthma percentiles for the six disadvantaged community census tracts range from a low of 29.40 to a high of 96.00 and reflect the contributions of existing causes and triggers. Asthma rates are a good indicator of population sensitivity to environmental stressors because asthma is both caused by and worsened by pollutants. Asthmatics are usually sensitive to environmental pollutants than the public in general and are considered in setting the health-protective limits on environmental pollutants as noted in staff's Public Health analysis. There is considerable uncertainty about the causes and triggers of asthma and the societal factors responsible for the differing rates among population groups. Given existing knowledge and the results of staff's public health analysis, staff does not expect the emissions from Mission Rock to significantly add to existing asthma rates as operated from the Mission Rock site or the Ormond Beach Area site, including the identified EJ population and the six disadvantaged community census tracts. For more detailed discussion regarding the existing asthma concern, please refer to staff's **Public Health Appendix A** in the **Public Health** section of this staff assessment.

- **Low Birth Weight Infants:** This indicator represents the percent of low birth weight babies and specifically measures the percentage of babies born weighing less than 2,500 grams (about 5.5 pounds) out of the total number of live births averaged over the years 2006 to 2012. The information was collected by the California Department of Public Health. The low birth weight percentiles for the six disadvantaged community census tracts range from 43.53 to 88.62 reflecting the range of the prevalence as compared with the other census tracts in California. These low-weight babies are more sensitive to the effects of air pollution than normal-weight babies. As previously noted, staff's HRA was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population. According to the results of the HRA for Mission Rock, the potential risk is below the health-based threshold. Staff anticipates similar HRA results from Mission Rock operated at the Del Norte/Fifth Street site. Therefore, the toxic emissions from this alternative would not significantly contribute to health effects for the low birth weight babies in the identified EJ population or the six disadvantaged community census tracts.
- **Cardiovascular Disease**: This indicator represents the spatially-modelled and age-adjusted rates for emergency department visits for acute myocardial infarction (commonly known as a heart attack), averaged over 2011 to 2013. The information was collected by the California Office of Statewide Health Planning and Development. There are many risk factors for developing cardiovascular disease, including diet, lack of exercise, smoking, and air pollution. Short-term exposure to air pollution, specifically particulate matter, has been shown to increase the risk of cardiovascular mortality shortly following a heart attack. There is also growing evidence that long-term exposure to air pollution may result in premature death for people who have had a heart attack. Also, the effects of air pollution on cardiovascular disease may be more pronounced in the elderly and those with pre-existing health conditions. The percentiles for the six disadvantaged community census tracts range from 26.03 to 97.84 reflecting the large differences in prevalence among these six disadvantaged community census tracts. As noted in the **Public Health** section of this assessment, individuals with cardiovascular disease are more sensitive to the effects of chemical exposure than the general public.

  Also, exposure limits for environmental pollutants are set based on the most sensitive individuals. Staff does not expect emissions from this alternative to adversely affect those who have already had a heart attack or adversely affect those who are at an increased risk for cardiovascular disease. This includes the identified EJ population and the six disadvantaged community census tracts.

EJ population impacts stems from the finding that such populations are sometimes exposed to environmental pollutants at much higher levels than the population in general. Staff concludes from the above analysis that the public health impacts from the toxic air pollutants of specific concern from the Ormond Beach Area Off-site Alternative would occur below levels of health significance for the general public and the identified

EJ population, as represented in **Alternatives Appendix 2 – Figure 5** and **Figure 6**. Also, this alternative would not contribute significantly to the indicators related to public health in the six disadvantaged community census tracts.

Soil and Water Resources

The overall CalEnviroScreen score evaluates multiple pollutants and factors collectively. Three of the environmental indicators are relevant to soil and water resources: drinking water contaminants, groundwater threats, and impaired water bodies. This section compares risks and impacts on the EJ populations with respect to the risks and impacts on the overall population within the vicinity of the project area.

Drinking Water

The cities of Oxnard, Port Hueneme, and Camarillo all supply municipal potable water to their respective service areas by blending imported water with local groundwater. CalEnviroScreen's score for Groundwater Threats is based on the number of storage tanks that are leaking pollutants on land or underground, the type and status of the cleanup sites, and the distance to the census tract. The score for Drinking Water Contaminants is based on the concentration of selected contaminants found in the potable water system(s) of the census tracts. Within the six-mile radius of this off-site alternative, the Drinking Water scores are not directly related to the Groundwater Threats score, as shown in **Alternatives Appendix 2 - Table 6**. The table shows the tract with the highest Groundwater Threat score in the 93 percentile also has the best Drinking Water score which is in the 30 percentile.

Low income and rural communities, particularly those served by small community water systems, can be disproportionately exposed to contaminants in their drinking water. Assuming the quantity and quality of generated wastewater of this off-site alternative is acceptable for disposal to the municipal sewer system, these wastewater discharges would not contribute to groundwater threats or to the quality of the area's drinking water.

Water Quality of Ormond Beach and Agricultural Drains

Four of the six census tracks have very high scores, ranging from 81 to 97 percentile, due to their distance to impaired waters, such as Revolon Slough and agricultural drains in the area. The Impaired Water Bodies score is based on the number of pollutants in nearby water bodies listed as impaired (exceeds established standards) and the water bodies' distance to the census tract. The other two tracks score zero because of their distance.

CalEnviroScreen data indicate that the Ormond Beach Area Off-site Alternative is located near three impaired water bodies. The Ormond Beach shoreline, roughly half a mile southwest of the site, is impaired due to the amount of indicator bacteria detected. Oxnard Drain No 2 and Oxnard Drain No 3, agricultural drains located southeast and approximately one mile from the site, are each impaired due to the presences of seven identified pollutants that exceed established standards.

The off-site alternative could potentially contribute sediment from water runoff during project construction or from storm water runoff during normal operations. Although local LORS would require that all runoff impacts are less than significant, actual impacts are difficult to estimate especially without a site-specific drainage study to evaluate on-site drainage management. Staff expects impacts from this alternative would be low due to the annual rainfall of the area and the site's distance to these three impaired water bodies.

Flooding Risks

Although CalEnviroScreen does not evaluate flood risks, disadvantaged communities could be disproportionately impacted. The ability to remain safe or evacuate high-risk areas during a flood event is largely affected by factors such as quality of residential structures, access to transportation, availability of emergency supplies, effective service by emergency responders, and exposure to environmental hazards. This off-site alternative would not cause these communities to flood nor exacerbate flood impacts during a flood event and, therefore, would not contribute to flooding impacts.

Summary Conclusion

The Ormond Beach Area Offsite Alternative would not contribute to flooding impacts. Potential impacts on drinking water supplies or on the water quality of nearby surface waters would be mitigated to less than significant with implementation of appropriate condition of certification. These mitigated impacts on the EJ populations, as represented in **Alternatives Appendix 2 – Figure 5** and **Figure 6**, would be less than significant and would not be disproportionate.

Traffic and Transportation

Project-generated traffic in the area of the Ormond Beach Area Off-site Alternative would be expected to occur along Rice Avenue and E. Pleasant Valley Road, which provide direct access to the alternative site from U.S. Route 101, where there are disadvantaged communities (see **Alternatives Appendix 2 - Figure 5**). Specifically, the roadway route from U.S. Route 101 along Rice Avenue would traverse one disadvantaged community and border another, and the route along E. Pleasant Valley Road borders two disadvantaged communities. The traffic density percentiles for census tracts in the area of this alternative site are all very low, with the exception of one census tract. The traffic density percentile for census tract 6111004902 is 68.53 (**Alternatives Appendix 2 - Table 4**). This census tract boundary includes the connecting point of Rice Avenue and U.S. Route 101.

Traffic density is an indicator included in the scoring for pollution burden in the CalEnviroScreen tool and is calculated for each census tract and displayed as a percentile weighed against the traffic density for all other census tracts in California. The score for traffic density is not an indicator of acceptable level of service (LOS) on roadways, which is the typical criterion used to determine traffic impacts. The traffic density score is included in the score for pollution burden and is represented as the number of vehicles (adjusted by road segment lengths in kilometers) per hour per kilometer of roadways within the buffered census tract (OEHHA 2017).

Thus, an increase of mobile emissions (increase in traffic density) appears to be the rationale and focus of this indicator. Traffic density is used to represent the number of mobile emission sources in a specified area. Traffic is a significant source of air pollution, particularly in urban areas. This pollution is measured and monitored by nearby air pollution monitoring stations. In the **Air Quality** section of this staff document, staff uses the highest local background ambient air concentrations from the last three years (2013 to 2015) as the baseline for analyzing potential ambient air quality impacts for the proposed project. In order to demonstrate compliance with ambient air quality standards, the modeled impacts from the project were added to hourly background concentrations conservatively derived from the measured ambient levels, which include emissions from mobile sources.

Additionally, as part of the CalEnviroScreen analysis staff evaluated whether the six census tracts near the Ormond Beach Area Off-site Alternative are disproportionately disadvantaged by background concentrations of ozone and PM2.5, which include emissions from mobile sources (either directly emitted or through secondary formation) and is a reflection of traffic density. It was determined that both ozone and PM2.5 background concentrations were well below their respective standards based on the CalEnviroScreen data and criterion. Therefore, neither ozone, nor PM2.5 concentrations currently affect EJ populations in these disadvantaged census tracts.

Vehicle emissions contain a number of pollutants including nitrogen oxides, carbon monoxide, and benzene. Negative health effects are associated with increased exposure to these pollutants. For the **Public Health** staff analysis, the effects of focus are the cancer and non-cancer effects from long-term or short-term exposure to these toxic pollutants or air toxics. These non-cancer effects include heart and lung disease, and increased mortality (OEHHA 2017). The measured levels should be seen as part of normal background levels as contributed by vehicles and other sources. The related cancer and non-cancer burden for any given area is established by comparing these measured levels with the significance levels as established for each toxicant by staff and the regulatory agencies.

Implementation of a Traffic Control Plan (**TRANS-2**) would ensure to the greatest extent feasible that the traffic generated by this off-site alternative would not travel on smaller local roads within the identified disadvantaged census tracts but rather on the highway which runs adjacent to the disadvantaged communities, as project trucks are directed to take truck routes unless infeasible. Furthermore, project construction traffic would likely take the most direct route to their destination, instead of driving through neighborhoods. Traffic during project operations would be negligible.

Staff's recommended conditions of certification for the Mission Rock project, including **TRANS-2** to implement a Traffic Control Plan, and **TRANS-3** to restore all public roads/easements/rights-of-way, would be appropriate mitigation measures to reduce traffic and transportation impacts of the Del Norte/Fifth Street Off-site

Alternative to less than significant for the population in general, including the EJ population represented in **Alternatives Appendix 2 - Figure 5** and **Figure 6**.

The majority of potential traffic impacts of this off-site alternative would be associated with construction. The operation phase of the project would generate a very small number of on-site worker trips and routine delivery and maintenance trips. A disproportionate impact on an EJ population related to traffic could occur if a project would affect public transportation as minority and low income people are more likely to rely on such transportation. As traffic from the off-site alternative would not significantly impact LOS, this alternative is not likely to affect public transportation, and thus would not have a disproportionate impact on the EJ population.

Waste Management

Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions of indicators as they relate to waste management, which is the process by which facility wastes are handled and disposed of in an environmentally sound manner. The wastes of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of waste depends on the hazardous ranking of its constituent materials. Existing LORS ensure the desired handling and disposal of waste materials without potential public or environmental health impacts. The CalEnviroScreen scores for the Ormond Beach Area Off-site Alternative are presented in **Alternatives Appendix 2 - Table 7** at the census tract level for each of the following environmental stressors: toxic releases from facilities, cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

The applicant described the methods for handling, transporting and disposing of all project wastes without significant impacts, whether there were any known contaminated soils and groundwater at the site, and listed the available disposal capacity of solid waste facilities that could accept project waste in accordance with applicable LORS. The same waste management method would be applied to the Mission Rock project if located at this alternative. Staff concludes from the Mission Rock waste management analysis that the proposed waste management plan would be adequate to ensure waste handling without significant environmental impacts and staff has recommended nine conditions of certification to ensure implementation. As waste management for Mission Rock would be the same for this alternative location, the environmental impacts would be similar. **Alternatives Appendix 2 - Figure 5** presents the EJ population based on a minority population and the location of the six disadvantaged community census tracts and **Alternatives Appendix 2 - Table 5** presents information on the area's EJ population based on a low income population within a six-mile radius of the Ormond Beach Area site. **Alternatives Appendix 2 – Figure 6** presents the boundaries of the statistical areas used to identify the presence or absence of an EJ population based on a low income population. As shown in the figure, the shaded areas indicate the boundaries in which a low income population resides. The health stressors of concern are discussed separately as follows:

- **Toxic Releases from Facilities:** This indicator represents the background levels of toxic substances as released from area sources. Specifically, toxicity-weighted concentrations of modeled chemical releases to the air from facility emissions and off-site incineration. The data are averaged over 2011 to 2013 by the US Environmental Protection Agency using a computer-based screening tool, Risk Screening Environmental Indicators. Percentiles range from 29.63 to 77.29 for the six disadvantaged census tracts in reflecting the range of rankings among all of California's census tracts. Such toxic releases could pose a risk of cancer or non-cancer effects as discussed in the HRA in staff's **Public Health** section of this assessment. The proposed facility would be licensed as a hazardous waste generator at any of the sites being considered. Therefore, the applicant would be required to comply with LORS ensuring safe storage and disposal of hazardous wastes of concern. As previously discussed, staff regards the waste management for Mission Rock and associated impacts would be similar for the Ormond Beach Area Off-site Alternative. Thus the applicant's waste management plan at this alternative site would be adequate for compliance on site and at the disposal sites and waste handling and disposal would not pose a significant health risk to either the general public or the identified EJ population. This alternative's waste management would not significantly contribute to the existing toxic releases in the six disadvantaged community census tracts. Also, if contaminated soils were encountered during construction the conditions of certification would ensure they were remediated in accordance with applicable LORS. Remediation, if necessary, would reduce the burden on the EJ population.
- **Cleanup Sites:** This indicator reflects the number of cleanup sites including Superfund sites on the National Priorities List and the Department of Toxic Substances Control (DTSC) EnviroStor database. The EnviroStor data management system tracks cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. The data was downloaded in December 2016. It also reflects the size and pollutant contribution of each site, and the distance to the census tract of focus. Remediation of any site is required to occur through specific LORS with the environmental risks increasing with the number of facilities. Percentiles range from 0 to 96.28 for the six disadvantaged census tracts in reflecting the range of rankings among all of California's census tracts. Staff concludes from its review that the applicant's management plan would be adequate to prevent site contamination at the Mission Rock site or at the Ormond Beach Area site that could affect the identified EJ population, including preventing an incremental contribution of significance that would add to the number of existing facilities in need of cleanup in the six disadvantaged community census tracts.
- **Hazardous Waste Generators and Facilities:** This indicator reflects the number of **weighted** permitted hazardous waste facilities and hazardous waste generators based on the Department of Toxic Substances Control EnviroStor hazardous waste database and hazardous waste tracking system from 2012 to 2014.

The EnviroStor data management system tracks cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. As with the Mission Rock site, the project at the Ormond Beach Area site would be licensed as a hazardous waste generator and would be required to comply with LORS ensuring safe handling and disposal of hazardous wastes. The percentiles for these six census tracts range from 43.11 to 88.27 and reflect the disparity in the distribution of hazardous waste sites and generators at the census tract level. Staff has included specific conditions of certification to ensure implementation of the related management plan as proposed by the applicant and concludes that, if constructed and operated at the Ormond Beach Area site, this alternative's toxic air emissions would not significantly add to the area's pollutant burden. Staff considers this alternative's toxic air emissions would not have a significant impact on the identified EJ population or the six disadvantaged community census tract.

- **Solid Waste Sites and Facilities:** This indicator reflects the number of facilities available for waste segregation for re-use or appropriate disposal. The data is as of December 2016. The percentiles for the six disadvantaged community census tracts range from 32.80 to 93.19. The applicant proposes to utilize only solid waste facilities that are verified to be in compliance with current LORS. There would be no increase in the number of solid waste generators given the adequacy of the available handling and disposal space as discussed by the applicant. Staff's related conditions of certification are intended to ensure compliance and avoid the need for additional facilities and related impacts on the environment. As staff considers the construction and operation of Mission Rock would be carried out the same if located at the Ormond Beach Area site, the impacts of the project would be similar at both sites. Staff considers that this alternative's waste disposal would not significantly add to the solid waste facilities, and thus not impact the identified EJ population or the six disadvantaged community census tracts.

Staff concludes from the above assessment that impacts from the Ormond Beach Area Off-site Alternative's waste management, both for on-site and off-site disposal, would occur below levels of health significance and these effects would not significantly contribute to impacts on the identified EJ population, as represented in **Alternatives Appendix 2 – Figure 5** and **Figure 6**, or the six disadvantaged community census tracts.

Other Technical Areas

Staff has recommended conditions of certification to reduce potential environmental impacts of the proposed project relating to Hazardous Materials Management, Noise and Vibration, Visual Resources, and Transmission Line Safety and Nuisance. With implementation of similar mitigation measures, potentially significant environmental impacts of the Ormond Beach Area Off-site Alternative on populations in the area of this off-site alternative, including the EJ population, could be reduced to less than significant. Socioeconomics staff concludes that proposed project impacts would be less than significant and therefore would have less-than-significant impacts on populations in a six-mile radius of the Ormond Beach Area Off-site Alternative, including the EJ population.

Staff concludes that impacts from this alternative would not disproportionately impact the EJ population living in this alternative's six-mile radius.

Cultural Resources staff considers impacts on Native American populations. Staff reviewed the ethnographic literature and historic literature to determine whether any Native American populations use or reside in the Ormond Beach Area Off-Site Alternative area, and concluded that the available information suggests no such groups use or reside in this area. Staff also walked the boundaries of the alternative site in November 2016 in an attempt to identify potential areas that could be used by contemporary Native American groups for hunting or gathering activities. The entire site is denuded of vegetation, and the surrounding industrial and agricultural uses of the area would likely preclude any hunting or gathering in the area. Because project-related consultation with California Native American tribes is on-going, staff does not have sufficient information to determine if Native Americans are members of an EJ population for this alternative, and if so, whether there would be impacts, disproportionate or otherwise, on Native American populations. Thus whether Native Americans are members of an EJ population and whether there would be impacts are not known at this time but a conclusion will be reached for the Final Staff Assessment.

STAFF CONTRIBUTORS TO THE ENVIRONMENTAL JUSTICE ANALYSIS FOR MISSION ROCK OFF-SITE ALTERNATIVES

The following staff are responsible for specific topics and technical analyses in the **Alternatives Appendix 2** section of this staff assessment. Staff names are listed with their area of technical expertise.

Topic	**Staff**
Demographics	Lisa Worrall
Technical Area	**Staff**
Air Quality	Joseph Hughes, P.E.
Cultural Resources	Matt Braun
Hazardous Materials Management	Alvin Greenberg, PhD.
Land Use	Lisa Worrall
Noise and Vibration	Christopher Dennis, P.E. and Shahab Khoshmashrab, P.E.
Public Health	Obed Odoemelam, PhD.
Socioeconomics	Lisa Worrall
Soil and Water Resources	Marylou Taylor, P.E.
Traffic and Transportation	Scott Polaske, Joseph Hughes, P.E., and Obed Odoemelam, PhD.
Transmission Line Safety and Nuisance	Obed Odoemelam, PhD.
Visual Resources	William Kanemoto
Waste Management	Obed Odoemelam, PhD.

REFERENCES

CalEPA 2017 – California Environmental Protection Agency, Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De Leon), April 2017, https://www.calepa.ca.gov/files/2017/04/SB-535-Designation-Final.pdf.

CDE 2017 – California Department of Education, Educational Demographics Unit, Data Quest, Select District Level Data for the year 2016 - 2017, http://dq.cde.ca.gov/dataquest.

OEHHA 2017 – California Environmental Protection Agency. California Communities Environmental Health Screening Tool, Version 3.0, Guidance and Screening Tool. January 2017. Available at: http://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.

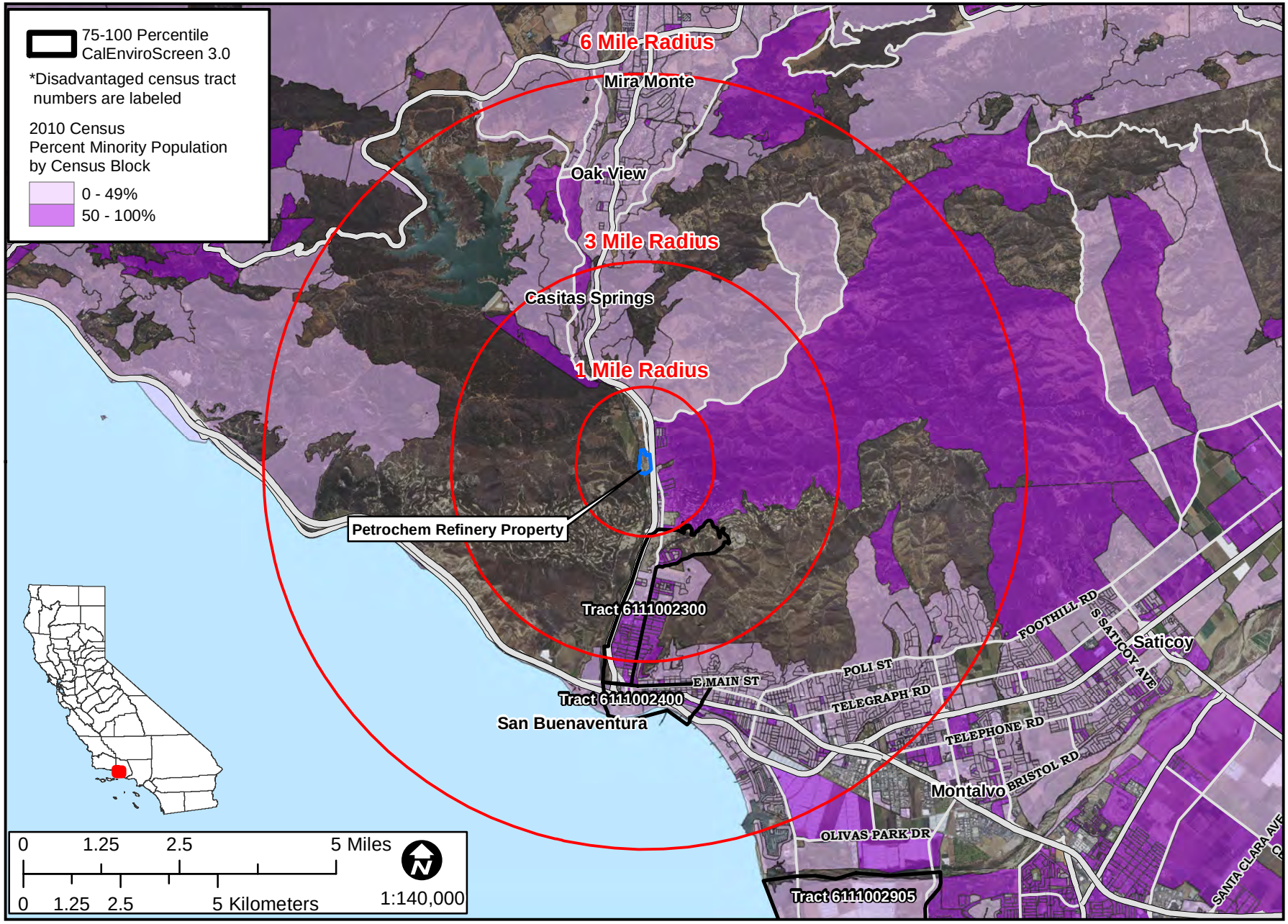
US Census 2014 – United States Census Bureau, OnTheMap Version 6.0, 2014, https://onthemap.ces.census.gov/.

U.S. Census 2015 – United States Census Bureau, S1701 Poverty Status in the Past 12 Months 2010–2014 American Community Survey 5-Year Estimates, http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

US EPA 2015 – United States Environmental Protection Agency, Guidance on Considering Environmental Justice During the Development of Regulatory Actions, May 2015, https://www.epa.gov/environmentaljustice/guidance-considering-environmental-justice-during-development-action.

ALTERNATIVES APPENDIX 2 - FIGURE 1

Mission Rock Energy Center - Census 2010 Minority Population by Census Block with CalEnviroScreen Disadvantaged Communities by Census Tracts for the Petrochem Refinery Off-site Alternative



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: USDA NAIP Imagery 2016, Census 2010 PL 94-171 Data and CalEnviroScreen 3.0 OEHHA 2017

ALTERNATIVES APPENDIX 2 - FIGURE 2

Mission Rock Energy Center - Boundaries used to Identify Environmental Justice Population Based on Low Income - Petrochem Refinery Off-site Alternative

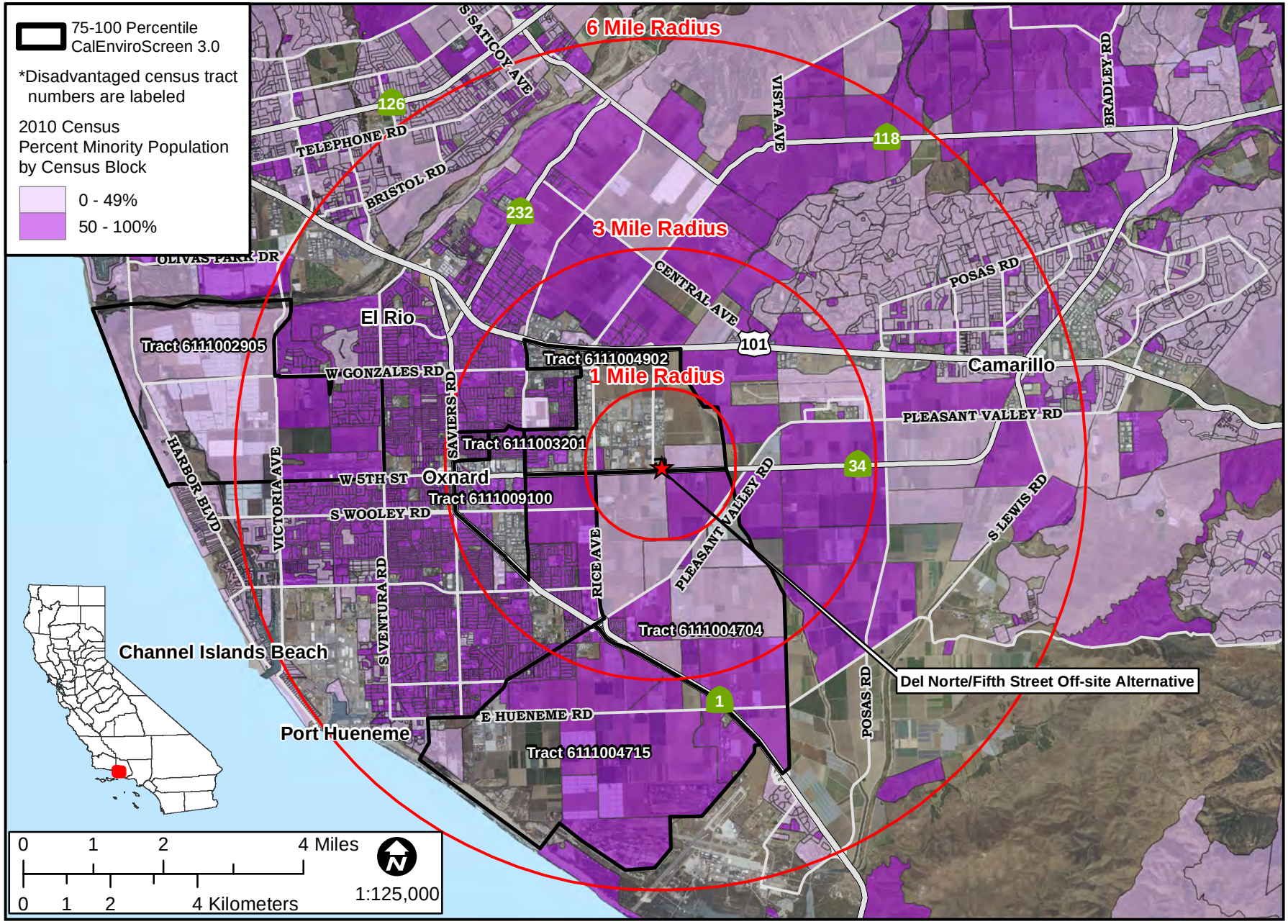
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: TIGER Data, CA Dept. of Education Data Quest

ALTERNATIVES APPENDIX 2 - FIGURE 3

Mission Rock Energy Center - Census 2010 Minority Population by Census Block with CalEnviroScreen Disadvantaged Communities by Census Tracts for the Del Norte/Fifth Street Off-site Alternative



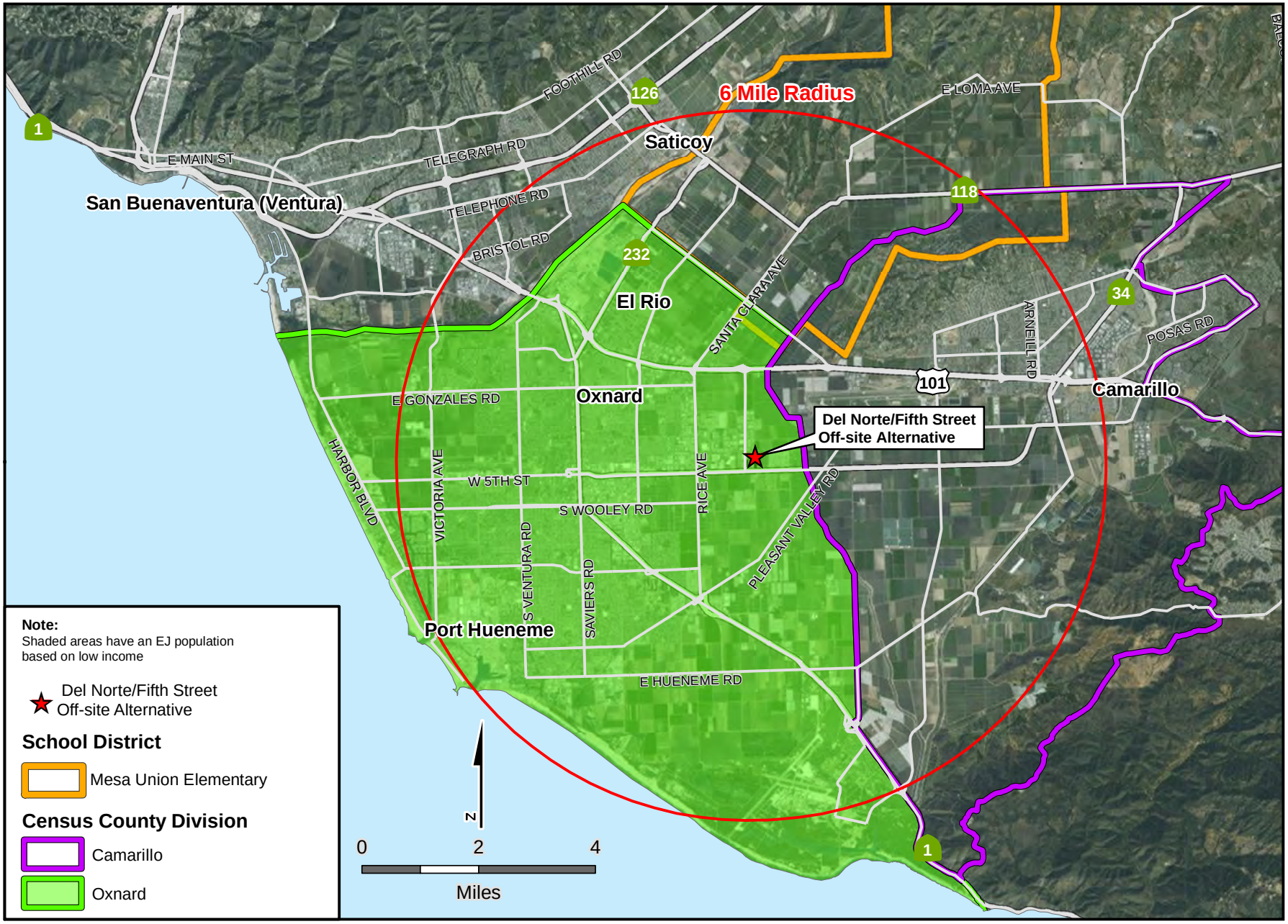
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: USDA NAIP Imagery 2016, Census 2010 PL 94-171 Data and CalEnviroScreen 3.0 OEHHA 2017

ALTERNATIVES APPENDIX 2 - FIGURE 4

Mission Rock Energy Center - Boundaries used to Identify Environmental Justice Population Based on Low Income - Del Norte/Fifth Street Off-site Alternative



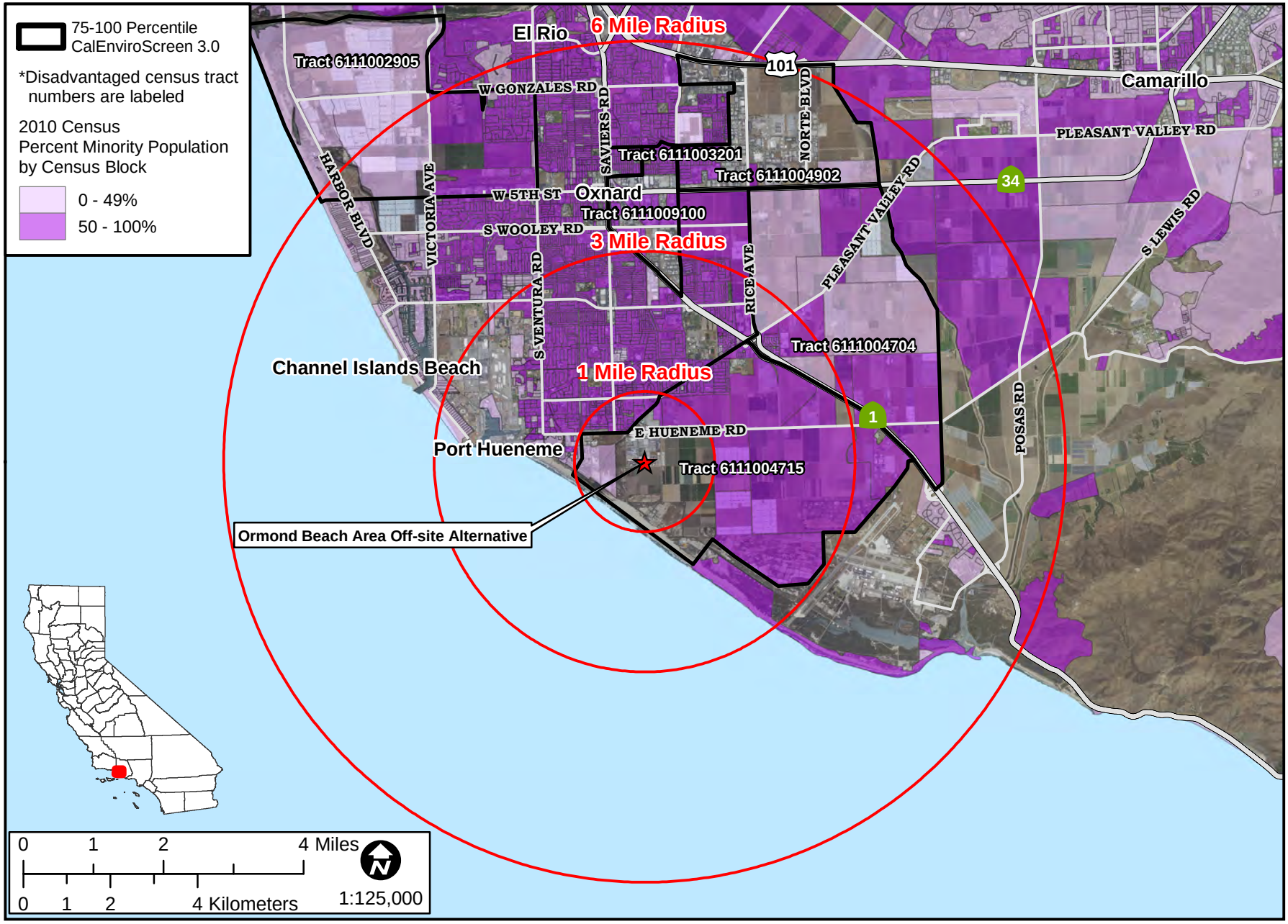
ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: TIGER Data, S1701 ACS 5-Year Estimates, CA Dept. of Education DataQuest

ALTERNATIVES APPENDIX 2 - FIGURE 5

Mission Rock Energy Center - Census 2010 Minority Population by Census Block with CalEnviroScreen Disadvantaged Communities by Census Tracts for the Ormond Beach Area Off-site Alternative



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: USDA NAIP Imagery 2016, Census 2010 PL 94-171 Data and CalEnviroScreen 3.0 OEHHA 2017

ALTERNATIVES APPENDIX 2 - FIGURE 6

Mission Rock Energy Center - Boundaries used to Identify Environmental Justice Population Based on Low Income - Ormond Off-site Alternative

ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE:TIGER Data, S1701 ACS 5-Year Estimates

BIOLOGICAL RESOURCES

Andrea Stroud

SUMMARY OF CONCLUSIONS

No habitat for special-status wildlife occurs on the Mission Rock Energy Center (Mission Rock or project) site; however, there is suitable habitat in the project vicinity for two bird species listed as state and federal endangered: least Bell's vireo (*Vireo bellii pusillus*) and western-yellow billed cuckoo (*Coccyzus americanus occidentalis*). Noise from construction work on-site would create significant impacts for least Bell's vireo that noise abatement measures would not reduce to less than significant. Staff's proposed Condition of Certification **BIO-11** requires least Bell's vireo protocol surveys and if present then daily monitoring during construction, implementation of noise reduction measures, incidental take authorization in the event of nest failure during construction, and mitigation. In addition, proposed Condition of Certification **BIO-13** would require the project owner to provide proof of take exemption from the U.S. Fish and Wildlife Service. Construction noise impacts to any nesting western yellow-billed cuckoo or least Bell's vireo near pole #3 of the generator-tie (gen-tie) line would be avoided because construction of the gen-tie would occur from September 16 through January 31 or, if raptors are nesting, September 16 through January 1. This is outside of the breeding season.

Loss of sensitive riparian habitat from the installation of gen-tie pole #16 would require a streambed alteration agreement, as covered under proposed Condition of Certification **BIO-8**, to mitigate these impacts. Although the proposed project site and gen-tie corridor contain no suitable habitat for the southwestern willow flycatcher (state and federal listed species), critical habitat for the species does occur along the Santa Clara River approximately 500 feet from the proposed project. Collision with the gen-tie from nocturnal migration would create significant impacts for southwestern willow flycatcher. The willow flycatcher, which is virtually indistinguishable from the southwestern willow flycatcher, may also be impacted. Staff's proposed Condition of Certification **BIO-12** would authorize incidental take (as impacts from collision with the gen-tie are unavoidable). It would also require that funds are provided to an organization currently enhancing and/or restoring suitable habitat for both the southwestern willow flycatcher and willow flycatcher to mitigate impacts to less than significant.

Staff has included proposed conditions of certification that will minimize and mitigate impacts to biological resources to a level that is less than significant. The construction and operation of the project would comply with all federal, state, and local laws, ordinances, regulations, and standards relating to biological resources if staff's conditions of certification are adopted and implemented.

INTRODUCTION

The Biological Resources section is staff's analysis of potential impacts to biological resources from the construction and operation of Mission Rock.

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

This analysis is based, in part, on information provided in the Application for Certification (15-AFC-02) (CAL 2015a, TN 207151-1 through 27); AFC Appendices (CAL 2015b, TN 207160-1 through 33); AFC Supplemental (CAL 2016a, TN 210540-2); Data Adequacy Supplement (CH2M 2016b, TN 211312); Data Responses Set 1 & 1A (CH2M 2016c, TN 213878); Data Responses Set 1A Supplement (CH2M 2016g, TN 215103); Data Responses 116 through 131 (Set 1B) (CH2M 2016d, TN 214394); Data Response Set 2 - #132-133 (CH2M 2017a, TN 215138); Data Response Set 2A (CH2M 2017b, TN 215669); Data Response Set 3 (CH2M 2017d, TN 216075); Supplemental Responses to Data Request Set 2 and Set 3 (CH2M 2017j, TN 216621); Data Response Set 5 (CH2M 2017e, TN 216218); comments from the public received during discovery; staff's observations during site visits of the proposed project on June 8, 2016 and March 28, 2017; and communications with resource agencies, specifically: California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (FWS), and National Marine Fisheries Service (NMFS), also known as the National Oceanic and Atmospheric Administration Fisheries; and other organizations, including Western Foundation of Vertebrate Zoology and The Nature Conservancy.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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

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

Applicable LORS	Description
Federal	
Endangered Species Act (Title 16, United States Code, Section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Take of federally listed species as defined in the Act is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or Section 10 Habitat Conservation Plan. The administering agencies are the FWS and National Marine Fisheries Service.
Migratory Bird Treaty (Title 16, United States Code, Sections 703 through 712)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird including nests with viable eggs). The administering agency is the FWS.
State	
California Endangered Species Act of 1984 (Fish and Game Code, Sections 2050 through 2098, including Section 2081 (b) and (c) – Incidental Take Permit	Protects California's rare, threatened, and endangered species. The administering agency is CDFW. Allows CDFW to issue an incidental take permit for a species listed as candidate, threatened, or endangered only if specific criteria are met. These criteria are listed in Title 14 of the California Code of Regulations Sections 783.4 subdivisions (a) and (b). However, the California Energy Commission under the Warren-Alquist Act (Pub. Res. Code Section 25500) has permitting authority "in lieu of" other state, local, and regional permits. (*ibid.*).
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered. The administering agency is CDFW.
Fully Protected Species (Fish and Game Code Sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also Title 14, California Code of Regulations, section 670.7). The administering agency is CDFW.
Nest or Eggs (Fish and Game Code Section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. The administering agency is CDFW.
Migratory Birds (Fish and Game Code Section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds. The administering agency is CDFW.
Lake and Streambed Alteration Agreement (Fish and Game Code Sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process. The administering agency is CDFW.
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	The Native Plant Protection Act designates state rare and endangered plants and provides specific protection measures for identified populations. The act also includes a salvage provision, enabling CDFW to collect rare and endangered plants from properties in advance of construction or other activities that would destroy the plants. The administering agency is the CDFW.

Applicable LORS	Description
Local	
Ventura County General Plan Biological Resources Policies (1-6) & Programs (1-4); Ventura County Tree Protection Regulations Section 8107-25 and Tree Protection Guidelines	The Ventura County General Plan encourages preservation and protection of significant biological resources in Ventura County from incompatible land uses and development. Significant biological resources include endangered, threatened or rare species and their habitats, wetland habitats, coastal habitats, wildlife migration corridors and locally important species/communities.

SETTING

PROJECT SITE AND VICINITY

Mission Rock would be located in unincorporated Ventura County, west of the city of Santa Paula (CAL 2016b, Figure 1.2-1, TN 211312). The proposed power plant would be located in an industrial park on an existing brownfield site (9.79-acre parcel) that is currently used for recreational vehicle and boat storage. The proposed power plant site is bordered by the Granite Construction Company asphalt recycling plant as well as auto dismantling and salvage outlets and auctions to the northeast, canine adoption and rescue boarding to the northwest, riparian vegetation and industrial facilities to the southeast, and riparian vegetation and agricultural areas to the west. The proposed power plant location is approximately 0.45 miles north of the current active channel of the Santa Clara River and approximately 500 feet from the riparian vegetation of the floodplain.

Approximately 2.89-acres (of an existing developed site) adjacent to the proposed power plant site would be used for construction laydown and parking. The project would include a 6.6-mile long, 230-kV transmission line (gen-tie) that would connect to the Southern California Edison Santa Clara substation. A 2.4-mile long natural gas pipeline connection and a new 1.7-mile long pipeline to bring treated recycled water from the Limoneira Company water treatment facility also would be developed to service the project. See **Project Description Figure 5** for locations of proposed project site, construction laydown and parking area, and linear facilities (process water pipeline, natural gas pipeline, and gen-tie line).

Construction of Mission Rock would be expected to occur over a 23-month period. For further project details, please see the **Project Description** section of this document.

REGIONAL SETTING

The majority of the proposed project, including the power plant site, laydown and parking area, natural gas pipeline, process water supply line, and a portion of the gen-tie (poles 1-25 and 37-40) would be located within the Oxnard Plain-Santa Paula Valley subsection of the Southern California Coast Ecological Section. The remaining portion of the gen-tie, specifically poles 26-36, would be located within the Santa Ynez-Sulphur Mountains subsections of the Southern California Coast Ecological Section.

Land cover types within the area consist of industry, agriculture (lemon orchards, strawberries, and avocado orchards), coastal sage scrub, chaparral, oak woodlands, grasslands, and riparian forest and scrub, which includes the Santa Clara River. The proposed project, including linears, would be located on the north side of the Santa Clara River. The Santa Clara River (see **Biological Resources Figure 1**) is the longest (~86 miles) free-flowing river in southern California, and is the only river that extends from the desert to the coast (Cooper 2004). The river drains parts of four mountain ranges in the Transverse Ranges System north and northwest of Los Angeles, then flows west onto the Oxnard Plain and into the Santa Barbara Channel of the Pacific Ocean (Beller et. al. 2011). The Santa Clara River watershed provides habitat for a wide array of native plants and animals. It is an important wildlife migratory corridor that also acts as a linkage for wildlife movement from the coast to the mountains and surrounding communities. It supports several plant and wildlife species that are threatened and/or endangered along with hundreds of migratory and resident species. The river and associated riparian vegetation is habitat for endangered species such as the unarmored three-spined stickleback (*Gasterosteus aculeatus*), southern steelhead trout (*Oncorhynchus mykiss irideus*), least Bell's vireo, and southwestern willow flycatcher. The Nature Conservancy owns and manages approximately 2,500 acres of floodway and/or floodplain land along 11 miles of the Santa Clara River).

Sensitive Natural Communities

Sensitive natural communities support unique or biologically important plant or wildlife species, or perform important ecological functions (e.g., bank stabilization or water filtration). These communities are usually locally and regionally scarce and therefore vulnerable to elimination. A sensitive natural community is defined by the dominant species which make up the plant community. A list of the sensitive natural communities and their global and state ranks may be found on the CDFW natural communities - list webpage (https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/List). The California Department of Fish and Wildlife considers a natural community as sensitive if it has a state rank of S1-S3 (CDFW 2017). Ventura County Planning Division also considers state ranks S1-S3 but in addition includes global ranks G1-G3 as sensitive for the purposes of a California Environmental Quality Act (CEQA) impact assessment (Ventura County 2017). The California Native Plant Society has a system for describing vegetation statewide and this standard has been accepted by state and federal agencies. This principal unit is called "Alliance" (or series). An "Alliance" (or series) is a standard vegetation classification, which is a floristically defined vegetation type identified by its dominant and/or characteristic species. Ranking of Alliances according to their degree of imperilment follows NatureServe's Heritage Methodology, in which all alliances are listed with a G (global) and S (state) rank (Master *et al*. 2012 pg. 46 Appendix A). For alliances with state ranks of S1-S3, all associations within them are also considered to be highly imperiled. The following two sensitive natural communities occur within the proposed project area (see **Biological Resources Figure 1**).

Southern Riparian Scrub

Southern riparian scrub (Global Rank 3, State Rank 3.2) (CDFW 2010, CNDDB 2017) occurs throughout the floodplain of the Santa Clara River. This community is characterized by tall, herbaceous riparian scrub dominated by mulefat (*Baccharis salicifolia*). Mulefat scrub is an early seral community, maintained by frequent flooding, and occurs in intermittent stream channels with course substrate and moderately deep water table. Species commonly found in this alliance include valley sedge (*Carex bararae*), sandbar willow (*Salix exiqua* var. *hindsiana*), arroyo willow (*S*. *lasiolepis*), and stinging nettle (*Urtica dioica* L. ssp. *holosericea*). No work would occur in southern riparian scrub habitat. This habitat would not be impacted by the proposed project or its linear facilities.

Riparian

Riparian habitats are considered special-status natural communities due to their limited distribution in California and since they often contain special-status plants and wildlife. They must be considered during a CEQA analysis. This community is adjacent to the proposed project power plant site and the linear facilities (Todd and Ellsworth barrancas). Gen-tie pole #16 would be placed within riparian habitat.

Critical Habitat

Critical habitat is a formal designation defined in section 3 of the Endangered Species Act. It is a specific geographic area that contains the physical or biological features essential for the conservation of endangered or threatened species and that may require special management and protection. Critical habitat may also include an area that is not occupied by the species but is needed for its recovery. The U.S. Department of Interior regulations (50 C.F.R., § 424.12) describe these features as including areas important for population growth, food and water resources, shelter, breeding and recovery sites, and habitats that “are representative of the historic distribution of the species.”

Critical habitat for southern California steelhead Evolutionarily Significant Unit (ESU) has been established within the Santa Clara River. For the southwestern willow flycatcher (federally listed species), critical habitat is within the riparian habitat and associated marshes for the length of the Santa Clara River (see **Biological Resources Figure 1**). The proposed Mission Rock site and linears would not be located in critical habitat. However, critical habitat occurs approximately 500 feet from the proposed project.

COMMUNITY AND PLANT AND WILDLIFE SPECIES DESCRIPTIONS

The applicant used a combination of aerial photography, literature review, and available databases to identify habitat that could support special-status plants or wildlife in the project vicinity. In addition to a literature review, biological reconnaissance surveys were performed on September 22 & 23, 2015.

In addition, avian surveys and a wetland delineation (CH2M 2016b, TN 211312) were conducted on March 1, 2016, rare plant surveys (CH2M 2016c, DR25-1, TN 213878) were conducted on April 20 and 21, 2016, and least Bell's vireo protocol surveys (CH2M 2016c, DR22-1, TN 213878) were conducted between April 20 and July 12, 2016. Staff visited the site on June 8, 2016 and March 28, 2017. The June visit consisted of the review of onsite features, the immediate surrounding area, and several gen-tie pole locations. The March visit consisted of meeting with U.S. Fish and Wildlife and California Department of Fish and Wildlife agency staff to discuss least Bell's vireo suitable habitat and impacts. The proposed project site is defined as the power plant location, laydown and parking areas as well as the associated linear facilities (natural gas pipeline, recycled process water supply line, and gen-tie line) (see **Project Description Figure 5**).

Land Cover Types/Vegetation Communities

Plants are generally grouped and classified into vegetation communities. This is one way to determine which communities are rare and need to be protected. The Manual of California Vegetation 2nd edition (Sawyer et al. 2009) provides descriptions of all natural communities in California. However, as communities are impacted by development or disturbance, such as the introduction or invasion of non-native species, it becomes difficult to classify the vegetation community using this manual. Some of the habitat in the proposed project area is described as land cover types/vegetation communities. The land cover types describe area altered from its natural state and vegetation communities describe areas that have received some disturbance but still maintain several native plant species and community structure.

Land cover types and vegetation communities (see **Biological Resources Figure 2**) identified within a 1-mile radius of the proposed project and 1,000 feet on either side of the linears include: developed, agricultural, coastal sage scrub, and riparian. The proposed project site and laydown areas occur on developed land. The linear facilities (gen-tie, gas line, and water line) occur in coastal sage scrub, riparian, and agricultural cover types. See Table DR117-1 (CH2M 2016d, TN 214394) for a complete list of wildlife species observed within various land cover types/vegetation habitats.

Developed

Developed areas include land from urban, suburban, residential, commercial and industrial uses. These areas are either dirt or paved surfaces with little to no vegetation cover except as ornamental and landscape trees and shrubs. Developed areas may provide habitat for birds protected under the Migratory Bird Treaty Act (MBTA), including species such as house finch (*Haemorhous mexicanus*), mourning dove (*Zenaida macroura*), and northern mockingbird (*Mimus polyglottos*). Common wildlife species observed during surveys include western fence lizard (*Sceloporus occidentalis*), raccoon (*Procyon lotor*), and Audubon cottontail (*Sylvilagus audubonii*).

Developed areas include the proposed power plant site as well as the construction laydown and parking area.

Agricultural

Agricultural land includes several orchards of lemon (*Citrus* sp.), navel oranges (*Citrus* sp.), Valencia oranges (*Citrus sinensis* 'Valencia'), tangelos (*Citrus* sp.) mandarins (*Citrus reticulata*) and avocado (*Persea americana*). Strawberries (*Fragaria* sp.), row crops, and plant nursery facilities are also present. Agricultural land may provide nesting and foraging habitat for bird species that are protected under the MBTA, such as burrowing owl (*Athene cunicularia*), horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferous*), red-tailed hawk (*Buteo jamaicensis*), and white-tailed kite (*Elanus leucurus*). Wildlife species observed in this cover type include Audubon cottontail and western fence lizard.

The gen-tie line, natural gas pipeline, and recycled process water pipeline would be routed through or adjacent to agricultural land currently used for commercial agriculture.

Coastal Sage Scrub

The coastal sage scrub in the proposed project area is comprised of California sagebrush scrub (*Artemisia californica* Shrubland Alliance) G5S5, California sagebrush-black sage scrub (*Artemisia californica-Salvia mellifera* Shrubland Alliance) G4S4, and purple sage scrub (*Salivia leucophylla* Shrubland Alliance) G4S4 vegetation communities. Coastal sage scrub consists of a dense cover of woody shrubs such as California sage (*Artemisia californica*), purple sage (*Salvia leucophylla*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), and California bush daisy (*Encelia californica*). Other associated species include lemon berry (*Rhus integrifolia*), giant wild rye (*Elymus condensatus*), common deer weed (*Acmispon glaber*), foothill needle-grass (*Stipa lepida*), coastal prickly pear (*Opuntia litoralis*), and Cucamonga man-root (*Marah macrocarpa*) (CH2M 2016d, TN 214394). A variety of bird species protected under the MBTA were seen in coastal sage scrub,, including American goldfinch (*Spinus tristis*), California towhee (*Melozone crissalis*), lesser goldfinch (*Spinus psaltria*), mourning dove (*Zenaida macroura*), and western scrub jay (*Aphelocoma California*). Other wildlife species found in this habitat include Audubon cottontail, common side blotched lizard (*Uta stansburiana*), and sagebrush lizard (*Sceloporus graciosus*). Gen-tie poles 22-38 would be located in this vegetation community.

Riparian

Riparian vegetation on the banks of aquatic habitat helps lower water temperatures and prevents erosion that could result in indirect impacts on special-status fish and fish in general. Higher sediment loads resulting from construction excavation or run-off could affect fish not only at project crossing sites, but also fish populations for miles downstream. Riparian habitats also act as corridors for the migration of many wildlife species. These riparian areas connect hydrologically to the Santa Clara River which supports the southern California steelhead ESU (*Oncorhynchus mykiss irideus*). Riparian plant species composition, cover, and extent varies within the different streams, creeks, canals, and drainages within the proposed project area.

Plant species include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), southern black walnut (*Juglans californica*), cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*) and blue gum (*Eucalyptus globulus*) along with patches of giant reed (*Arundo donax*). Associated understory shrub species include mulefat (*Baccharis salicifolia*), elderberry (*Sambucus nigra ssp. caerulea*), poison oak (*Toxicodendron diversilobum*), tree tobacco (*Nicotiana glauca*), mugwort (*Artemisia vulgaris*), stinging nettle (*Urtica dioica*), coyote brush (*Baccharis pilularis*), and cattail (*Typha* sp.). The herbaceous understory consists primarily of non-native species such as black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), poison hemlock (*Conium maculatum*), and fennel (*Foeniculum vulgare*).

The riparian habitat in the project area includes elements of Coast live oak woodland (*Quercus agrifolia* Woodland Alliance) G5S4, Red willow thickets (*Salix laevigata* Woodland Alliance) G3S3, Arroyo willow thicket (*Salix lasiolepis* Shrubland Alliance) G4S4, and Eucalyptus groves (*Eucalyptus globulus*, *E. camaldulensis* Semi-Natural Woodland Strands). Riparian habitat in the project area supports a variety of bird species that are protected under the MBTA. Several species observed include Bewick's wren (*Thryomanes bewickii*), Cliff swallow (*Petrochelidon pyrrhonota),* Downey woodpecker (*Picoides pubescens*), great egret (*Ardea alba*), least Bell's vireo (*Vireo bellii pusillus*), Orange crowned warbler (*Oreothypis celata*), Red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathares aura*). Other wildlife species that also utilize riparian habitat include raccoon, Audubon cottontail, Baja California treefrog (*Pseudacris hypochondriaca*), common side-blotched lizard, western fence lizard, and western pond turtle (*Contopus sordidulud*). Riparian habitat occurs adjacent to the project site and along the Todd and Ellsworth barrancas (see **Biological Resources Figure 2**). These drainages occur west of the project site and run north/south and drain into the Santa Clara River watershed.

Jurisdictional Waters

Waters of the State

Waters of the state are regulated, in part, by the CDFW pursuant to Section 1600 of California Fish and Game Code. The CDFW regulates activities that could:

- divert, obstruct, or change the natural flow or the bed, bank, or channel of any river, stream, or lake;
- change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flakes, or ground pavement where it may pass into any river, stream, or lake and also includes impacts to associated riparian habitat.

The riparian habitat within the proposed project area are part of the waters of the state that CDFW regulates (see **Biological Resources Figure 3**). The installation and maintenance of the gen-tie poles would affect riparian habitat occurring adjacent to the proposed project site and the Todd and Ellsworth barrancas.

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. Locally Important Species are plants or animals that are not endangered, threatened, or rare but are considered to be unique to a county or region.

Special-status species and Locally Important Species are defined as meeting one or more of the following criteria:

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

    a) Plants that are declining throughout the extent of their range and have five (5) or fewer element occurrences in Ventura County;

    b) Wildlife for which the population(s) in Ventura County represents 10 percent or more of the known extant global distribution;

    c) Wildlife for which there are five or fewer element occurrences, or less than 1,000 individuals, or less than 2,000 acres of habitat that sustains populations in Ventura County;

    d) Wildlife that are generally declining throughout their range or are in danger of extirpation in Ventura County.

- Any other species receiving consideration during environmental review under the California Environmental Quality Act.

Biological Resources Table 2 identifies occurrences of special-status species reported in the California Natural Diversity Database (CNDDB) (CDFW 2017) and California Native Plant Society's (CNPS 2017) Inventory of Rare and Endangered Plants that have the potential to occur in the habitats near and/or on the proposed project site. Species that are present or have moderate to high potential for occurrence are discussed further below.

Biological Resources Table 2
Special-status Species Known to Occur or Potentially Occurring Within a 6-mile Radius of the Mission Rock Site

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ Global Rank/State Rank	Potential for Occurrence in Proposed Project Area	Suitable Habitat
PLANTS			
Davidson's saltscale *(Atriplex serenana* var. *davidsonii)*	__/__/1B.2/G5T1/S1	**Low**	coastal bluff scrub, coastal scrub
Catalina mariposa lily *(Calochortus catalinae)*	__/__/4.2/G4/S4	**Present**	chaparral, cismontane woodland, coastal scrub, and valley and foothill grasslands
Blochman's dudleya *(Dudleya blochmaniae ssp. blochmaniae)*	__/__/1B.1/G3T2/S2	**Low**	coastal sage scrub, chaparral, valley, or foothill grassland
Conejo dudleya *(Dudleya parva)*	FT/__/1B.2/G1/S1	**Not Likely to Occur**	coastal scrub or grassland on volcanic outcroppings
Verity's dudleya *(Dudleya verity)*	FT/__/1B.1/G1/S1	**Not Likely to Occur**	chaparral, cismontane, or coastal sage scrub on volcanic outcroppings
Conejo buckwheat *(Eriogonum crocatum)*	__/SR/1B.2/G1/S1	**Not Likely to Occur**	chaparral, valley grassland, or coastal sage scrub on volcanic outcrops
Robinson's pepper-grass *(Lepidium virginicum var. robinsonii)*	__/__/4.3/G5T3/S3	**Not Likely to Occur**	chaparral or coastal scrub
Gerry's curly-leaved monardella *(Monardella sinuata ssp. gerryi)*	__/__/1B.1/G3T1/S1	**Low**	coastal scrub
INVERTEBRATES			
Crotch bumble bee *(Bombus crotchii)*	__/__/__/G3G4/S1S2	**Not Likely to Occur**	open grassland and scrub
Sandy beach tiger beetle *(Cicindela hirticollis gravida)*	__/__/__/G5T2/S2	**Not Likely to Occur**	coastal dune
Monarch butterfly (overwintering population) *(Danaus plexippus)*	__/__/__/G4T2T3/S2S3	**Low**	wind protected tree groves

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ Global Rank/State Rank	Potential for Occurrence in Proposed Project Area	Suitable Habitat
California brackishwater snail *(Tryonia imitator)*	__/__/__/G2/S2	**Not Likely to Occur**	aquatic
FISH			
Santa Ana sucker *(Catostomus santaanae)*	FT/__/__/G1/S1	**Not Likely to Occur**	aquatic
Tidewater goby *(Eucyclogobius newberryi)*	FE/SSC/__/G3/S3	**Not Likely to Occur**	aquatic
Unarmored threespine stickleback (Gasterosteus aculeatus williamsoni)	FE/SE/__/G5T1/S1	**Not Likely to Occur**	aquatic
Arroyo chub *(Gila orcuttii)*	__/SSC/__/G2/S2	**Not Likely to Occur**	aquatic
Southern California steelhead (ESU) *(Oncorhynchus mykiss)*	FE/__/__/G5T1Q/S1	**Moderate**	Santa Clara River
AMPHIBIANS			
Foothill yellow-legged frog *(Rana boylii)*	__/SSC/__/G3/S3	**Not Likely to Occur**	riparian
REPTILES			
Silvery legless lizard (*Anniella pulchra pulchra*)	__/SSC/__/G3G4T3T4Q/S3	**Moderate**	beaches, chaparral, pine-oak woodland, or riparian
Coastal whiptail *(Aspidoscelis tigris stejnegeri)*	__/__/__/G5T5/S3	**Low**	coastal sage scrub
Western pond turtle (*Emys marmorata*)	__/__/__/G3G4/S3	**Present**	aquatic
Coast horned lizard *(Phrynosoma blainvillii)*	__/SSC/__/G3G4/S3S4	**Low**	southern riparian scrub
Two-striped garter snake *(Thamnophis hammondii)*	__/SSC/__/G4/S3S4	**Low**	willow riparian
South coast gartersnake *(Thamnophis sirtalis ssp.)*	__/SSC/__/G5T1T2/S1S2	**Low**	marshes and upland
BIRDS			
Tricolored blackbird *(Agelaius tricolor)*	__/CE/__/G2G3/S1S2	**Low**	wetland
Western burrowing owl *(Athene cunicularia)*	BCC/SSC/__/G4/S3	**Moderate**	agricultural, grassland
Western yellow-billed cuckoo *(Coccyzus americanus occidentalis)*	FT,BCC/SE/__/G5T2T3/S1	**Moderate**	riparian
White-tailed kite *(Elanus leucurus)*	__/FP/__/G5/S3S4	**Moderate**	open-country habitat
Southwestern willow flycatcher *(Empidonax traillii extimus)*	FE/SE/__/G5T2/S1	**Moderate**	willow and riparian
California horned lark	__/WL/__/G5T3Q/S3	**Moderate**	agricultural

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ Global Rank/State Rank	Potential for Occurrence in Proposed Project Area	Suitable Habitat
(Eremophila alpestris actia)			
Bank swallow *(Riparia riparia)*	__/ST/__/G5/S2	**Not Likely to Occur**	riparian or lowland
Least Bell's vireo *(Vireo bellii pusillus)*	FE/SE/__/G5T2/S2	**High**	riparian
MAMMALS			
Pallid bat *(Antrozous pallidus)*	__/SSC/__/G5/S3	**Not Likely to Occur**	Forages close to ground in open areas
Dulzura pocket mouse *(Chaetodipus californicus femoralis)*	__/SSC/__/G5T3/S3	**Not Likely to Occur**	chaparral, coastal scrub, or grassland
San Diego desert woodrat *(Neotoma lepida intermedia)*	__/SSC/__/G5T3T4/S3S4	**Not Likely to Occur**	coastal scrub
American badger *(Taxidea taxus)*	__/SSC/__/G5/S3	**Moderate**	shrub, forest, or herbaceous habitat

Biological Resources Table 2 – Notes

STATUS CODES:

State

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

Federal

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

California Native Plant Society (CRPR)

1A Presumed extirpated in California and either rare or extinct elsewhere
1B: Rare or endangered in California and elsewhere
2A: Presumed extirpated in California but more common elsewhere
2B: Rare or endangered in California but more common elsewhere
3: Plants for which we need more information- Review list
4: Plants of limited distribution – Watch list
0.1: Seriously threatened in California (over 80 of occurrences threatened/high degree and immediacy of threat)
0.2: Moderately threatened in California (20-80% of occurrence threatened/moderate degree and immediacy of threat)
0.3: Not very threatened in California (<20% of occurrence threatened/low degree and immediacy of threats or no current threats known)

Global Rank/State Rank

Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values
G1 = **Critically Imperiled** – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines or other factors.
G2 = **Imperiled**- At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines or other factors.
G3 = **Vulnerable** - At moderate risk of extinction due to very restricted range, relatively few populations (often 80 or fewer), recent and widespread declines or other factors.
G4 = **Apparently Secure**- Uncommon but not rare; some cause for long-term concern due to declines other factors.
G5 = Secure- Common; widespread and abundant.
State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical
S1 = Critically Imperiled in state because of extreme rarity (often 5 or fewer populations) or because of other factors such as deep declines making it extremely vulnerable to extirpation from state.
S2 =Imperiled in the state because of rarity due to very restricted range, few populations (often 20 or fewer), steep declines, or other factors machining vulnerable to extirpation from state.

Common Name (*Scientific Name*)	Status Fed/State/CRPR/ Global Rank/State Rank	Potential for Occurrence in Proposed Project Area	Suitable Habitat
S3 =Vulnerable in state due to restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state. S4 = Apparently secure – Unknown but not rare in the state; some cause for long-term concern due to declines or other factors. S5 = Secure – Common, widespread, and abundant in the state. SH = All California occurrences historical (i.e., no records in > 20 years). **Rank qualifiers** ? = Inexact numeric rank Q = Questionable taxonomy that may reduce conservation priority. **Potential Occurrence** (from Ventura County Planning Division Standards for Initial Study Biological Assessments, p.23): **High** – Suitable habitat is present within or near the proposed site; species expected to occur on or near site **Moderate** – Low quality habitat is present within or near the proposed site; species was not identified during reconnaissance surveys of the site; species may occur on or near site **Low** – Marginal habitat is present on or adjacent to site **Not Likely to Occur** – No suitable habitat occurs on or near site			

Special-Status Plant Species

The applicant conducted rare plant surveys on April 20 and 21, 2016 during the blooming period for all species known or potentially occurring in the project area and found one special-status species, the Catalina mariposa lily near the gen-tie line route.

Catalina mariposa lily (*Calochortus catalinae*)

The Catalina mariposa lily is a CNPS Rank 4.2 species (CNPS 2017), meaning it has limited distribution or is infrequent throughout a broader area in California. It is not very threatened in California, but its status should be monitored regularly. It occurs in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. This species is located near the locations of poles 25 and 26 along the gen-tie line but outside of any construction work and therefore would not be impacted by the installation of the poles (CH2M 2016c, DR25-1, TN 213878).

Special-Status Wildlife

The applicant conducted general reconnaissance surveys of the proposed project and linears on September 22 and 23, 2015. Protocol surveys for least Bell's vireo (*Vireo bellii pusillus)* and a site assessment for the southwestern willow flycatcher (*Empidonax traillii extimus*) were performed between April 20 and July 12, 2016 (CH2M 2016c, DR22-1, TN 213878). The potential for special-status wildlife species to occur within the power plant site and offsite construction laydown and parking area is very low. However, suitable habitat occurs in riparian habitat adjacent to the proposed power plant site and the offsite linears, in particular the gen-tie line. The following accounts focus on species with a moderate or high potential to occur on or near the proposed project that may be affected directly or indirectly by project, construction, operation, or closure.

Fish

Southern California Steelhead (Oncorhynchus mykiss)

The southern California steelhead is a federal listed endangered species and a California species of special concern.

The range of this species in North America includes Pacific Coast streams from Alaska, south to northern Baja California.

The southern California steelhead recovery planning area extends from the Santa Maria River to the Tijuana River at the U.S border with Mexico. The goal of the Southern California Steelhead Recovery Plan (NMFS 2012) is to recover anadromous steelhead and ensure the long-term persistence of self-sustaining wild populations of steelhead across the Distinct Population Segment and ultimately to remove them from the Federal List of Endangered and Threatened Wildlife. The Santa Clara River is one of the major steelhead watersheds in the northern portion of the recovery planning area.

Installation of pole #16 within the Ellsworth Barranca could affect this species through temporary levels of increased turbidity and temporary and permanent impacts to riparian habitat (Jay Ogawa, pers. comm. July 11, 2016, TN 212670). A more recent discussion with NMFS determined that since none of the creeks are critical habitat and the species is not expected to be present in the drainage of the barranca, consultation between the applicant and NMFS is not necessary. However, NMFS is available to provide technical assistance if needed.

Reptiles

Silvery Legless Lizard (Anniella pulchra pulchra)

The silvery legless lizard is a California species of special concern. This species ranges from Antioch in Contra Costa County, south through the Coast, Transverse, and Peninsular Ranges, along the western edge of the Sierra Nevada Mountains and parts of the San Joaquin Valley and Mojave Desert to El Consuelo in Baja California. It occurs in sandy or loose loamy soils under sparse vegetation of beaches, chaparral, or pine-oak woodland; or near sycamores, cottonwoods, or oaks that grow on stream terraces. Sandy loam soils of stabilized dunes are highly desirable habitat.

The silvery legless lizard is a fossorial animal that constructs burrows in loose, sandy soil and is most active during the morning and evening. Threats include loss of sandy substrates through urbanization, agriculture, or other disturbance where loose substrate is removed or altered. Other factors that alter the substrate include livestock grazing, off-road vehicle activities, sand mining, beach erosion, excessive recreational use of coastal dunes, and the introduction of exotic plant species, such as ice plants (*Carpobrotus edulis* and *Mesembryanthemum crystallinum*), Marran grass (Ammophila arenaria), veldt grass (*Ehrharata calycina*), and eucalyptus trees (*Eucalyptus* spp.). This species was not seen during surveys and there is limited suitable habitat in the project area.

Western Pond Turtle (Emys marmorata)

The western pond turtle is a California species of special concern. They are found throughout western California, and are associated with permanent or nearly permanent water in a variety of habitat types. They require slack or slow-water aquatic habitat, both water and aerial basking sites, and shallow water with dense submergent or short emergent vegetation for hatchlings (Jennings and Hayes 1994). In addition, western pond turtles require an upland nest site for egg-laying, in the vicinity of aquatic habitat. Western pond turtles were observed in the Todd Barranca on April 20, 2016 and May 16, 2016 (CH2M 2016c, DR22-1, TN 213878).

Birds

Least Bell's Vireo (Vireo bellii pusillus)

The least Bell's vireo is a state and federal listed endangered species. The vireo is a rare and local summer resident of southern California's lowland riparian woodlands. This species typically nests and forages in lowland riparian woodland habitats (Garrett and Dunn, 1981; Franzreb, 1989). It is associated with early successional habitat including willow (*Salix* sp.), cottonwood (*Populus* sp.), mule fat (*Baccharis salicifolia*), or other riparian plant species. Least Bell's vireo is often found in areas with high structural diversity, including overstory trees and understory saplings and shrubs. They winter in southern Baja California, Mexico utilizing mesquite scrub vegetation in arroyos, but some also use palm groves and hedgerows associated with agricultural fields and rural residential areas. Least Bell's vireo have been observed utilizing adjacent upland habitat and pairs whose territories included nonriparian habitat placed at least one nest there (Kus and Miner 1989). The decline of the least Bell's vireo has been attributed to breeding habitat loss and brood parasitism by the brown-headed cowbird (*Molothrus ater*).

The least Bell's vireo commonly selects willow and mule fat-dominant habitat for nesting (Franzreb, 1989). The breeding distribution of this species is restricted to eight southern counties in California and portions of northern Baja California, Mexico (USFWS 1998). Nesting season is generally from April 10 to July 31 with the entire breeding season lasting till September 15. Vireo can nest in willow, stinging nettle, and poison oak.

Suitable habitat for the vireo occurs in riparian habitat in the proposed project area. Locations include riparian habitat adjacent to the power plant site and the lower reaches of the Todd and Ellsworth barrancas (see **Biological Resources Figure 4**). Protocol surveys were conducted for the least Bell's vireo between April 20 and July 12, 2016 in and adjacent to the Todd Barranca within 500 feet of proposed pole #3. Least Bell's vireos were detected in the Todd Barranca on June 21, July 1, and July 12, 2016. Records from FWS also show several least Bell's vireo detections (heard and observed) along the Santa Clara River floodplain south of the proposed project site and within the project area (Chris Dellith pers. comm., November 14, 2016). According to FWS the vireo has nested in a lemon tree in 2007 (Chris Dellith pers. comm., May 18, 2017).

Another pair is currently nesting in another lemon tree in the vicinity of the proposed project according to CDFW (Dan Blankenship pers. comm. April 28, 2017). Although protocol surveys were conducted, breeding territories and nest locations were not mapped.

Southwestern Willow Flycatcher (Empidonax traillii extimus)

The southwestern willow flycatcher is a state and federal listed endangered species. It breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g. reservoirs) (USFWS 2002).

This species generally requires extensive stands of willow scrub, with some riparian overstory present. Historically, this species was known to breed in lowland riparian habitat throughout southern California, but has been extirpated from most regions.

The southwestern willow flycatcher arrives on breeding grounds in May and June and departs in August to mid-September (USFWS, 2002). Wintering habitat requirements are not well known but include brushy savanna edges, second growth, shrubby clearings and pastures, and woodlands near water.

The southwestern willow flycatcher has experienced extensive loss and modification of breeding habitat. The destruction and modification of riparian habitats have been caused by the reduction or elimination of surface and subsurface water due to diversion and groundwater pumping, changes in water and soil chemistry due to disruption of natural hydrologic cycles, and establishment of invasive non-native plants. No suitable riparian habitat occurs within the proposed power plant site or within the Todd and Ellsworth barrancas but does occur in the Santa Clara River nearby.

Willow Flycatcher (Empidonax traillii)

The willow flycatcher is a state listed endangered species. Typical habitat is extensive willow thickets. Breeding populations have been found to occur in the Sierra Nevada, and along the Kern, Santa Margarita, San Luis Rey, and Santa Ynez rivers in southern California. This species tends to occur in more open river valleys or large mountain meadows with dense willow growth. It has been observed breeding along the Santa Ynez river in Santa Barbara County and along the Santa Clara River in Ventura County. It is a common spring and fall migrant in low elevations in riparian habitats throughout the state except the north coast. The decline of the willow flycatcher is attributed to the loss and degradation of riparian habitat. Other impacts to this species include livestock grazing of breeding habitat and nest parasitism by brown-headed cowbirds. No protocol surveys were conducted for this species and none were seen during reconnaissance surveys.

Western Yellow-billed Cuckoo (Coccyzus americanus occidentalis)

The western population of the yellow-billed cuckoo is listed as state endangered and listed as a federal threatened species.

Western yellow-billed cuckoo use wooded habitat with dense cover and water nearby, including woodlands with low scrubby vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes.

In the West, much of the riparian habitat historically occupied by western yellow-billed cuckoo has been converted to farmland and housing, leading to significant population declines and the possible extirpation. Once common in California's Central Valley, coastal valleys, and riparian habitats east of the Sierra Nevada, habitat loss now constrains the California breeding population to small numbers of birds along the Kern, Sacramento, Feather, and Lower Colorado rivers. The western population of the cuckoo is a candidate for federal endangered status. Sites replanted with riparian vegetation in southern California have supported breeding birds within three years, demonstrating the potential for habitat restoration. As long-distance, nocturnal migrants, western yellow-billed cuckoo are vulnerable to collisions with tall buildings, cell poles, radio antennas, wind turbines, and other structures.

WYBC have been found twice during the main part of the breeding season in July of 2011 and 2014 along the Santa Clara River. There has also been sightings in the cities of Santa Paula, Ventura, and Camarillo during spring migration in June over the past few years (Linnea Hall pers. comm. April 19, 2017). However, none have been seen nesting, although they could be nesting within the Santa Clara River floodplain and possibly the barrancas. The lower reach of the Todd Barranca is suitable habitat for the cuckoo according to FWS (Chris Dellith pers. comm. March 28, 2017). A protocol survey was conducted for this species however the breeding territory and nesting locations were not done. None were seen during reconnaissance surveys.

White-tailed Kite (Elanus leucurus)

The white-tailed kite is a state fully-protected species. It is a yearlong resident in coastal and valley lowlands typically around agricultural areas. They prey mostly on voles and other small diurnal mammals, occasionally on birds, insects, reptiles, and amphibians. It forages in undisturbed, open grasslands, meadows, farmlands, and emergent wetlands. The species nests in trees with dense canopies for cover but in southern California also roosts in salt grass and Bermuda grass. None were seen during reconnaissance surveys.

Western Burrowing Owl (Athene cunicularia hypugaea)

The burrowing owl is a California species of special concern. It is a yearlong resident of open dry grassland, prairie, or desert floor habitats. Burrowing owls may be diurnal, crepuscular, or nocturnal, although hunting typically occurs at night. The burrowing owl is known to occur in urban, disturbed areas, and at the edges of agricultural fields, including orchards, 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. No protocol surveys were conducted and none were seen during reconnaissance surveys.

California Horned Lark (Eremophila alpestris actia)

The California horned lark is a CDFW watch list species. It occurs in coastal regions primarily from Sonoma County to San Diego County but also part of the San Joaquin valley and east to the Sierra foothills. They are found on barren ground with short grass or scattered bushes and often use fallow agricultural fields. Nests are located in hollows on ground often next to grass tuft or clods of earth or manure. The California horned lark mostly eat insects, snails, and spiders during the breeding season and grass, forb seeds and other plant matter during other seasons. None were seen during reconnaissance surveys.

Mammals

American Badger (Taxidea taxus)

The American badger is a California species of special concern. Badgers prefer to live in dry, open grasslands, fields, and pastures. They are solitary nocturnal animals who are active at night. Badgers construct underground burrows in friable soils and frequently reuse old burrows. They eat fossorial rodents such as rats, mice, chipmunks, ground squirrels, and pocket gophers but also eat some reptiles, insects, earthworms, eggs, birds, and carrion. None were seen during reconnaissance surveys.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

A significant effect on the environment is defined in the CEQA Guidelines as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (Cal. Code Regs., tit. 14, § 15065 and § 15382). The Ventura County’s Threshold of Significance Criteria has also been added (VC 2011). In staff’s analysis the following impacts to biological resources are considered significant if the project would result in:

- A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the CDFW or FWS;
- a substantial adverse effect to wildlife species that are federally-listed or state-listed or proposed to be listed;
- a substantial adverse effect to wildlife species of special concern to CDFW or animals fully protected in California;
- a substantial adverse effect to plant species considered by CDFW, FWS, or CNPS to be rare, threatened, or endangered in California or with strict habitat requirements and narrow distributions;

- a substantial adverse effect on any riparian habitat or other sensitive natural community (i.e., a community that is especially diverse; regionally uncommon; or of special concern) identified in local or regional plans, policies, regulations or by the CDFW or FWS;
- substantial adverse effects on habitats that serve as breeding, foraging, nesting, or migrating grounds and are limited in availability or that serve as core habitats for regional plant and wildlife populations;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the Clean Water Act, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- conflict with any policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;

VENTURA COUNTY INITIAL STUDY THRESHOLD OF SIGNIFICANCE CRITERIA

These local guidelines are presented to identify the general parameters of potentially significant impacts to biological resources. A list of significance thresholds is provided as guidance for the identification of project-specific impacts for each of the following biological resource categories. In the absence of biologically-based, substantial evidence to the contrary, if an impact from a project has the potential to meet or exceed the following thresholds of significance, such impact will be considered a significant impact.

Species

Project Impact Thresholds

A project will have a direct or indirect physical impact to a plant or animal species if a project, directly or indirectly:

- reduces a species' population;
- reduces a species' habitat;
- increases habitat fragmentation; or
- restricts reproductive capacity.

The determination of whether a project's impact is significant or not shall be based on both the current conservation status of the species affected and the severity or intensity of impacts caused by the project. Endangered, rare and threatened species, as well as special status species, are more susceptible to project impacts than a more common species. If a project's impact is severe or intense, it may cause a population of a more common species to decline substantially or drop below self-sustaining levels, which would be considered a significant impact.

The following types of impacts to plant and animal species or their habitats are considered potentially significant:

- loss of one or more individuals, occupied habitat or critical habitat designated by the U.S. Fish and Wildlife Service of a species officially listed as endangered, threatened or rare under the Endangered Species Act (50, C.F.R., § 17.11 or 17.12) or California Endangered Species Act (Cal. Code Regs., tit. 14, § 670.2 or 670.5), a candidate species, or a California Fully Protected Species;
- impacts that would eliminate or threaten to eliminate one or more element occurrences of a special-status species not otherwise listed under the federal Endangered Species Act or California Endangered Species Act, or as a Candidate Species or California Fully Protected Species;
- impacts that would threaten the viability of a habitat that sustains a population of a special status wildlife species;
- impacts that would restrict the reproductive capacity of a special status species;
- "Take" of birds protected under the California Fish and Game Code (§ 3503.5, 3511, and 3513) and the federal Migratory Bird Treaty Act (MBTA), as "take" is defined in the Fish and Game Code and MBTA;
- increases in noise and/or nighttime lighting to a level above ambient levels that would adversely affect a special status species;
- increases in human access, predation or competition from domestic animals, pests or exotic species, or other indirect impacts, to levels that would adversely affect special status species;
- impacts severe enough to substantially reduce the habitat of a wildlife species or cause a wildlife population to decline substantially or drop below self-sustaining levels, pursuant to section 15065 of the CEQA Guidelines, Mandatory Findings of Significance.

Ecological Communities

Sensitive Plant Communities

The following types of impacts to sensitive plant communities are considered potentially significant:

- construction, grading, clearing, or other activities that would temporarily or permanently remove sensitive plant communities. Temporary impacts to sensitive plant communities would be considered significant unless the sensitive plant community is restored once the temporary impact is complete;
- indirect impacts resulting from project operation at levels that would degrade the health of a sensitive plant community.

Waters and Wetlands

The following project impacts to waters and wetlands are considered potentially significant:

- removal of vegetation;
- grading;
- obstruction or diversion of water flow;
- change in velocity, siltation, volume of flow, or runoff rate;
- placement of fill;
- placement of structures;
- construction of a road crossing;
- placement of culverts or other underground piping; and/or
- any disturbance of the substratum;
- disruptions to wetland or riparian plant communities that would isolate or substantially interrupt contiguous habitats, block seed dispersal routes, or increase

  vulnerability of wetland species to exotic weed invasion or local extirpation. An example would be disruption of adjacent upland vegetation to a level that would adversely affect the ecological function of the wetland, such as where such vegetation plays a critical role in supporting riparian-dependent wildlife species (e.g. amphibians), or where such vegetation aids in stabilizing steep slopes adjacent to the riparian habitat , which reduces erosion and sedimentation potential;
- interference with ongoing maintenance of hydrological conditions in a water or wetland. The hydrology of wetlands systems must be maintained if their function and values are to be preserved. Adverse hydrological changes might include altered freshwater input; changes in the watershed area or run-off quantity, quality, or velocity; drawing down of the groundwater table to the detriment of groundwater-dependent habitat; substantial increase in sedimentation; introduction of toxic elements or alteration of ambient water temperature

- the project does not provide an adequate buffer for protection of the functions and values of existing waters or wetlands. The buffer is measured from the top-of-bank or edge of wetland or riparian habitat, whichever is greater. Ventura County General Plan Policy 1.5.2-4 requires a minimum buffer of 100 feet from significant wetland habitat. In accordance with this policy, buffer areas may be increased or decreased upon evaluation and recommendation by a qualified biologist and approval by the decision-making body. Factors to be used in determining adjustment of the 100-foot buffer include soil type, slope stability, drainage patterns, presence or absence of endangered, threatened or rare plants or animals, and compatibility of the proposed development with the wildlife use of the wetland habitat area.

Habitat Connectivity

A project would impact habitat connectivity if it would: (a) remove habitat within a wildlife movement corridor; (b) isolate habitat; (c) construct or create barriers that impede fish and/or wildlife movement, migration or long term connectivity; or (d) intimidate fish or wildlife via the introduction of noise, light, development or increased human presence.

The following types of impacts to habitat connectivity are considered potentially significant:

- A habitat connectivity feature (e.g.; a linkage, corridor, chokepoint or stepping stone) would be severed, substantially interfered with, or potentially blocked.
- Wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction would be prevented or substantially interfered with.
- Wildlife would be forced to use routes that endanger their survival. For example, constraining a corridor for mule deer or mountain lion to an area that is not well-vegetated or that runs along a road instead of through a stream corridor or along a ridgeline.
- Lighting, noise, domestic animals, or other indirect impacts that could hinder or discourage fish and /or wildlife movement within habitat connectivity feature (e.g., a linkage, corridor, chokepoint or stepping stone) would be introduced.
- The width of linkage, corridor or chokepoint would be reduced to less than the sufficient width for movement of the target species (the species relying upon the connectivity feature). The adequacy of the width shall be based on the biological information for the target species; the quality of the habitat within and adjacent to the linkage, corridor, or chokepoint; topography; and adjacent land uses.
- For wildlife relying on visual cues for movement, visual continuity (i.e., lines-of-sight) across highly constrained wildlife corridors, such as highway crossing structures or stepping stones, would not be maintained.

DIRECT AND INDIRECT IMPACTS AND MITIGATION

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

This section evaluates the potential direct and indirect impacts (both temporary and permanent) to biological resources from proposed Mission Rock construction and associated activities, operation, and maintenance. This section also details the applicant's proposed mitigation measures and staff's recommended conditions of certification, as necessary, to reduce impacts to less-than-significant levels.

Construction Impacts to Riparian Habitat

Construction impacts to riparian habitat and to waters of the state would occur from the grading, potential tree removal, and the trimming of riparian vegetation during construction of the gen-tie. These activities would remove approximately 0.216 acre of riparian habitat of which 0.211 acre are temporary and 0.005 acre are permanent impacts. These impacts would be significant without mitigation. The CDFW requires a Streambed Alteration Agreement for impacts to riparian habitat.

Protected trees (some of which may be native riparian species) may also be impacted from construction activities (grading, potential removal, and the trimming of riparian vegetation). The Ventura County Tree Protection Ordinance (Section 8107-25) of the Ventura County Non-Coastal Zoning Ordinance has a tree permit program for the removal, trimming of branches or roots, or grading or excavating within the root zone of a "protected tree". The applicant agrees to follow this ordinance. Staff's proposed Condition of Certification **BIO-7** requires the project owner to comply with the Ventura County Tree Protection Ordinance.

The applicant has proposed to restore and revegetate all temporarily disturbed areas and provide a Site Restoration Plan. Other mitigation measures proposed include having a qualified biologist on the project (to monitor all construction and to ensure compliance with the conditions of certification), preparing and implementing a Worker Environmental Awareness Program (WEAP), conducting pre-construction bird surveys, and performing clearance surveys for special-status species. Staff agrees with these measures and has incorporated them along with additional measures into staff's proposed conditions of certification.

To reduce impacts to riparian habitat to less than significant, staff proposes the following conditions of certification which include those proposed by the applicant:

- Conditions of Certification **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority) would ensure a qualified biologist(s) would be onsite during construction and operations when activities occur adjacent to and in riparian habitat;
- Condition of Certification **BIO-5** (WEAP) would inform all workers of the sensitive resources and laws that protect them, what the consequences are if they are not followed, and what to do and who to contact if any sensitive resources may be impacted during construction and operation of the power plant and linear facilities;
- Condition of Certification **BIO-6** (BRMIMP) incorporates all the conditions of certification and any other permits required;
- Condition of Certification **BIO-7** (General Impact Avoidance and Minimization Measures) includes details of the Site Restoration Plan;
- Condition of Certification **BIO-8** (Streambed Alteration Agreement) includes general condition language provided by CDFW to reduce impacts to riparian habitat and any associated special-status species; and
- Condition of Certification **BIO-9** (Pre-Construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds) requires breeding bird surveys prior to construction and operational activities.

Permit requirements for the Streambed Alteration Agreement (**BIO-8**) have been incorporated into staff's conditions of certification because the Energy Commission has a one-stop permitting process for all thermal power plants rated 50 MW or more under the Warren-Alquist Act (Pub. Resources Code, § 25500). Under the act, the Energy Commission's certificate is "in lieu of" other state, local, and regional permits. (*ibid.*)

Construction and Impacts to Special-Status Wildlife

Noise

Noise from construction of the proposed power plant and linear facilities (natural gas pipeline, process water supply line, and the gen-tie line) could discourage wildlife from foraging and nesting in nearby habitat due to interference with communication, disturbance or disruption of activities, or startling from loud noises. Avian species such as the least Bell's vireo and western yellow-billed cuckoo are most likely to be adversely impacted by construction and noise due to their proximity. Many bird species rely on vocalizations during the breeding season to attract a mate within their territory, also noise and movement from construction could adversely affect nesting behavior and other activities.

Studies have shown that elevated noise levels can affect the behavior of certain bird species and could interfere with acoustic communication (Dooling and Popper 2007).

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

Construction equipment would generate sudden or loud startling noises, distracting wildlife, and the movement from construction activities could result in flushing birds. Flushing of nesting birds could increase the risk of predation or cause nest failure if birds repeatedly leave the nest and eggs are not properly incubated, or eggs or nestlings are knocked from the nest by a flushing parent. Foraging birds are expected to have more flexibility in avoiding areas with disruptive noise, but nesting birds including listed species would be vulnerable to these effects and take of nests protected under the Migratory Bird Treaty Act (MBTA), California Fish and Game Code sections 3503 and 3513, and the California Endangered Species Act and Endangered Species Act, could occur.

U.S. Fish and Wildlife Service (FWS) considers noise levels above the 60 dBA threshold to constitute an adverse impact. Listed species and noise impacts regarding the 60 dBA threshold have been discussed in the Huntington Beach Energy Project siting case. It was determined the 60 dBA threshold used for humans is not an accurate threshold to use for avian species. The perceived noise level for birds at 60dBA would actually be 45-50 dBA which is a 10-15 dBA noise level reduction (CEC 2014b testimony by Mr. Dooling). The Huntington Beach hearings resulted in the Energy Commission declining the 60 dBA threshold as too low a disturbance threshold to use for avian species (CEC 2014a). In addition, current scientific literature does not support the 60 dBA threshold as some species can tolerate higher levels intermittently (USFWS 2011). However, construction noise is expected to be a constant noise source lasting approximately 23-months.

Special-status species which may be present in the riparian and coastal sage scrub habitats would be impacted by construction noise. The riparian habitat located adjacent to the proposed project power plant site and near gen-tie pole #3 is suitable habitat for special-status birds that may breed in these areas, including the LBVI (state and federal endangered species) and the WYBC (state endangered and federal threatened species).

At the request of FWS (Chris Dellith pers. comm., TN 210997), the applicant conducted least Bell’s vireo protocol surveys starting in April 2016.

Surveys detected vireos within the Todd Barranca (CH2M 2016c Attachment DR22-1, TN 213878). In addition, data from FWS and CNDDB show several LBVI detections along the Santa Clara River south of the Todd and Ellsworth barrancas as well as near the unnamed drainage adjacent to the project site (CNDDB 2017; Chris Dellith pers. comm., November 15, 2016). However, mapping of their breeding territories were not provided by the applicant.

To determine impacts to the LBVI, the location of breeding territories are required. Precise location(s) of breeding territories allow staff to determine noise levels at breeding habitat and to determine how many nesting pairs would be impacted by construction noise. Staff requested a second round of protocol surveys in order to obtain this information (CEC 2017e TN 216218).

In its response to staff's request, the applicant did not dispute the presence of the least Bell's vireo, but declined to conduct what it considered duplicative surveys. In its response to staff's data request, applicant expressed concern that such surveys would delay the project, and took the position that pre-construction surveys would provide the necessary information and that therefore staff had all that is required to complete the PSA. (See CH2M 2017i, TN 216436). Unfortunately, least Bell's vireo are quiet when sitting on a nest and could be missed during pre-construction surveys. Protocol surveys would be more appropriate to determine presence and nest locations.
In its data response to staff's request, applicant also expressed a belief that the only suitable habitat is along the Todd and Ellsworth barrancas, which are not adjacent to the proposed project power plant site. However, as explained below, staff has determined after consulting with FWS and CDFW that the suitable habitat for least Bell's vireo in and around the project is not limited to the Todd and Ellsworth barrancas.

Staff met with representatives of FWS and CDFW on March 28, 2017 to clarify the location of all suitable least Bell's vireo habitat. The riparian habitat adjacent to the proposed project power plant site contains early and mid-successional vegetation, flowing water, and several plant species in which vireo may nest (willows, poison oak, and stinging nettle) (see **Biological Resources Figures 5** through **9**). Other riparian species present include coyote brush and cattails. As mentioned earlier, a row of Eucalyptus trees is present adjacent and parallel to the riparian habitat. This riparian habitat contains the necessary composition of forbs and shrubs, suitable plant species for nesting, and water. Therefore this area is considered suitable nesting habitat for the least Bell's vireo.

Riparian habitat along the lower reach of the Todd Barranca is also considered suitable nesting habitat. The vegetation in this area is more stratified with a herbaceous, shrub, and tree layer. Slow flowing water is present. Plant species include southern black walnut, giant reed, poison hemlock, elderberry, black cottonwood (*Populous trichocarpa*), poison oak, and willow. The proposed pole #16 is located further upstream within the Ellsworth Barranca and the FWS considered this location marginal habitat for least Bell's vireo during the March 28, 2017 site visit. A previous analysis in 2009 did not consider this location suitable least Bell's vireo habitat (Padre Associates, Inc. 2009)

and bird surveys conducted for the associated project – a bridge over the Ellsworth Barranca for West Telegraph Road - revealed no least Bell's vireo or any other sensitive species (Padre Associates, Inc. 2011). Based on the site visit and the previous report and surveys, the FWS has determined this area is not suitable least Bell's vireo habitat.

The lower reach of the Todd Barranca near proposed pole #3 is suitable western yellow-billed cuckoo habitat. Construction noise created along the gen-tie would impact possible nesting western yellow-billed cuckoo. Protocol surveys were not conducted for this species as the applicant assumed that no suitable habitat occurred along the linear facilities. As stated earlier, western yellow-billed cuckoo have been documented within the project vicinity but it is not known if they are breeding.

Construction (including) noise impacts would be created by heavy machinery such as dump trucks, backhoe, concrete mixer, Derrick crane, jack hammer, pneumatic tools, and rock drill, including the use of a pile driver and a helicopter. A helicopter would be used to transport equipment to pole locations within the hills.

The applicant determined noise impacts at offsite sensitive receptors, called R-1and R-2 (CAL 2015aa, TN 207151-14), based on human presence. However sensitive receptors for nesting birds also occur adjacent to the project site and along the linears (see **Biological Resources Figure 4**) and more accurately reflect noise impacts for nesting birds. Because pile driving and a helicopter create noise at very loud levels (104 dBA at a distance of 50 feet), the applicant proposes to conduct any work with very loud noises, such as pile driving, outside of the nesting season.

Biological Resources staff consulted with Noise and Vibration staff to determine noise impacts to biological resources. Staff's **Biological Resources Table 3** below shows typical construction equipment used at the lowest and highest noise level ranges excluding the use of pile driving and a helicopter. In addition, staff added a column of the noise level with the 10-15 dBA reduction for birds as stated earlier.

Biological Resources Table 3
Construction Noise

Equipment	Construction Phase	Noise Level (dBA) at 50 Feet	Noise Level (dBA) at 50 Feet with (10-15 dBA) Reduction
Rock Drill	Clean Up	98	83-88
Dump Truck	Site Clearing and Excavation	91	76-81
Backhoe	Site Clearing and Excavation	85	70-75

Even factoring in a reduction, the lowest expected noise levels would be 70-75 dBA when 50 feet from the source. Nesting habitat adjacent to the proposed project power plant site is as close as 8 feet so noise levels would be much higher when equipment is closer than 50 feet.

A rock drill working at the boundary of the proposed power plant site would be 98 dBA at 50 feet and would naturally dissipate to 70-75 dBA at 395 feet from the source. However, noise levels would be higher in least Bell's vireo suitable nesting habitat closer to the site. Since noise levels would still be high near suitable least Bell's vireo habitat, this would be a significant impact. These noise levels would be significant without mitigation.

Suitable western yellow-billed cuckoo habitat (see **Biological Resources Figure 4**) occurs along the lower reach of the Todd Barranca near pole #3 and is approximately 1,500 feet from the proposed project power plant site. However, construction of the linears (gen-tie, natural gas pipe line, and process water supply line) could impact this species. The applicant has proposed to do all work associated with the gen-tie outside of the breeding season. Staff has incorporated this restriction into Condition of Certification **BIO-7** (General Impact Avoidance and Minimization Measures), which would only allow gen-tie construction work to occur from September 16 through January 31 (or September 16 through January 1 if raptors are present) near suitable western yellow-billed cuckoo and least Bell's vireo habitat, and the same restriction for pile driving and helicopter use. If a helicopter must cross the Santa Clara River, it must stay at a minimum of 500 feet above the river; however, complete avoidance of the Santa Clara River during the breeding season is preferable. Condition of Certification **BIO-8** (Streambed Alteration Agreement) would restrict work occurring in, and within 500 feet of, sensitive riparian habitat.

The applicant proposes to conduct pre-construction surveys for all construction activities. Migratory bird nests would be monitored to ensure and construction activities do not result in nest failure. Buffers would be set up around the nest and in the case of extremely loud noises (i.e. pile driving and helicopter use), this work would occur outside of the nesting season as stated earlier. Staff agrees with these measures and has incorporated them into staff's proposed Condition of Certification **BIO-9** (Pre-construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds). While pre-construction nest surveys are appropriate for the majority of nesting birds it would not determine nest locations and breeding territories of least Bell's vireo.

In addition to the above mitigation, staff proposes the following conditions of certification to help reduce significant impacts to least Bell's vireo, western yellow-billed cuckoo, and migratory birds to less than significant:

- Conditions of Certification **BIO-1** through **BIO-6** require a Designated Biologist and/or Biological Monitor to be on site during construction. Designated Biologist and Biological Monitor authority and duties include providing WEAP training to all new workers during construction and annually during operations, and preparing a BRMIMP which incorporates all state and federal permit conditions;

- Condition of Certification **BIO-7** would restrict construction work along the gen-tie to occur outside of the breeding season (September 16 through January 31 (September 16 through January 1 if raptors are present);

- Condition of Certification **BIO-8** (Streambed Alteration Agreement) requires construction work (at the power plant site) to begin an hour after sunrise and end an hour before sunset;
- Condition of Certification **BIO-9** requires pre-construction nest surveys;
- Condition of Certification **BIO-10** (Burrowing Owl Avoidance and Minimization Measures) requires pre-construction surveys and specifies the appropriate buffers for construction activities from active burrowing owl burrows;
- Condition of Certification **BIO-11** (Least Bell's Vireo Mitigation) requires least Bell's vireo protocol surveys to determine nesting territories and nest locations, daily monitoring of the nest(s) during construction work, noise reduction measures (e.g. sound curtain) that visually block construction work activity that would startle nesting birds and help reduce noise levels. If no nests are found then no sound reduction, visual blocking, or daily monitoring of vireo nests, or funds to improve habitat would be required. However, protocol surveys would be re-initiated each year if construction continues. If least Bell's vireo are nesting and monitoring shows that an active nest (eggs or young are present) has been abandoned this would be considered "take". This condition would authorize "take" for least Bell's vireo and require the project owner to provide funds to an organization that is currently providing enhancement and/or restoration of least Bell's vireo habitat. The amount of funds is determined based on the territory size (in acres) of each nesting pair with nest failure;
- Condition of Certification **BIO-13** (Compliance with the Federal Endangered Species Act for Impacts to Least Bell's Vireo, Western Yellow-Billed Cuckoo, and Southwestern Willow Flycatcher) requires proof of take exemption from U.S. Fish and Wildlife Service for federal listed species impacts.

With implementation of these measures, impacts to least Bell's vireo, western yellow-billed cuckoo and migratory birds from construction noise would be mitigated to less than significant.

General Construction Impacts

Lighting

Lighting from construction of the proposed project is a concern for the least Bell's vireo breeding habitat. Construction activities are anticipated to occur between 7:00 a.m. and 7:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. on Saturdays. Some construction hours beyond this may occur to help complete critical construction activities.

During startup, work may continue for 24-hours per day. However, bright lighting at dawn and dusk as well as at night could disturb the nesting, foraging, or mating activities of the least Bell's vireo and make them more visible to predators.

Although existing operations at the current Min-Cal Enterprises for recreational vehicle and boat storage yard and nearby vehicle traffic provide some ambient lighting to which local species have acclimated, potentially significant impacts to sensitive wildlife from increased dawn, dusk, and night lighting could occur. To reduce impacts to least Bell's vireo, no dawn, dusk, or night construction would be allowed in or near suitable vireo habitat during the breeding season (March 15 through September 15). Staff's proposed Condition of Certification **BIO-8** would restrict construction activities in or within 500 feet

of riparian habitat to an hour after sunrise and end an hour before sunset. In addition, Visual Resources staff have proposed Condition of Certification **VIS-3** (Site Lighting – Project Construction and Commissioning), which requires fixed lighting to be hooded and shielded to direct light down and toward work areas, task-specific lighting to be used to the maximum extent practicable, and lighting to be kept off when not in use and motion sensors to be installed. With implementation of these measures, impacts to least Bell's vireo and other migratory bird species from lighting would be less than significant.

Storm Water Discharge

During construction soil and other materials could wash into the riparian habitat adjacent to the proposed project site, and thus into water draining toward the Santa Clara River watershed. To avoid water quality impacts into the adjacent riparian habitat, the applicant proposes to implement a Storm Water Pollution Prevention Plan (SWPPP) and use Best Management Practices (BMPs). Soil and Water staff has included these measures into Condition of Certification **SOIL & WATER-1** (NPDES General Permit), which requires the project owner to manage storm water as required through a National Pollutant Discharge Elimination System General Permit and to develop and implement a construction Storm Water Pollution Prevention Plan. In addition to this measure staff has proposed Condition of Certification **BIO-8** to reduce impacts to riparian habitat to less than significant.

Invasive Weeds

The disturbance and removal of vegetation increases the chance for non-native species of which several have become invasive (noxious or exotic) weeds to invade native plant communities. Restoration of these areas along with the control of these weeds helps to maintain healthy vegetation communities along with associated wildlife population.

The spread of invasive or noxious weeds destroys wildlife habitat and forage, threatens endangered species and native plants, and increases soil erosion and groundwater loss. Construction activities and soil disturbance could introduce new invasive and/or noxious weeds to coastal sage scrub and riparian habitat adjacent to the proposed project site and along the gen-tie line and could further spread weeds already present in the project vicinity.

Invasive weeds can easily colonize areas of disturbance and the spread of invasive plants is a major threat to biological resources in the greater vicinity of the project site because non-native plants can displace native plants and supplant wildlife foods that are important to herbivorous species, resulting in overall habitat degradation.

The applicant proposes to restore and revegetate all disturbed areas. A Site Restoration Plan (**BIO-7**) would be developed and would be included into the Biological Resources Mitigation Implementation Management Plan. Elements of the Site Restoration Plan include: goals and objectives; a description of methods used to achieve these goals and objectives; success criteria for revegetation success; a monitoring and maintenance program which includes remedial measures; a noxious weed control plan; annual reporting; a timeline for restoration, and monitoring schedule of planned activities.

Staff's proposed Condition of Certification **BIO-7** includes weed prevention measures, including the requirement that vegetation and ground disturbance be limited to the minimum required for construction of the project, and that the site and linears construction ingress/egress be only along defined routes. Further, straw bales and other sediment control features would be weed free, and non-native, invasive and/or noxious weed species are prohibited from being used as landscape plantings. In addition, Condition of Certification **BIO-8** requires an Invasive Species Education Program that would include a discussion of the invasive species currently present within the project site as well as those that may pose a threat to or have the potential to invade the project site.

Operational Impacts

Riparian Habitat and Waters of the State

During operation the maintenance of the gen-tie would require routine trimming and possible removal of riparian vegetation (CH2M 2016d, DR121-1 Page 1-3, TN 214394). There would be yearly tree/clearance inspections to determine if there are any new or potential hazards from trees or branches that could fall or grow into the conductor. If tree or branch clearing is required, a tree-clearing subcontractor would be used to either trim branches or cut down trees. These impacts could be significant without mitigation. Staff's proposed Conditions of Certification **BIO-1** through **BIO-4** require a biologist to be present during work that would occur adjacent to and in riparian habitat and conduct surveys for special-status species prior to any trimming or removal. Condition of Certification **BIO-14** requires mitigation for the removal and/or trimming of native trees. This follows the County of Ventura Tree Protection Guidelines. Condition of Certification **BIO-8** includes measures to conduct all tree trimming of riparian vegetation outside of the breeding season for birds (February 1 through September 15), including within 500 feet of riparian habitat which contains suitable least Bell's vireo habitat (see **Biological Resources Figure 4**). It also requires revegetation using native species and criteria to help ensure success of the new plantings. Condition of Certification **BIO-8** would reduce impacts to riparian habitat and least Bell's vireo including migratory bird species to less than significant during operations.

Noise

Operational noise from the power plant could disturb the least Bell's vireo . A noise contour map (CH2M 2016c, TN 213878) shows the predicted operational sound levels at suitable least Bell's vireo habitat of 60 dBA, 65 dBA, and a portion above 65 dBA.

For birds, this would be equivalent to 50 dBA to 55 dBA and a portion around 60 dBA (see discussion in previous subsections regarding perceptive noise ranges for birds). Staff consulted with Noise and Vibration staff to determine the accuracy of this noise contour map. For projects that are approved and constructed, Noise and Vibration staff will compare the noise contour map provided during the licensing phase to the one provided during operations. In staff's experience, the contour maps prepared during licensing consistently match the actual noise levels measured during operation. Therefore, operational noise impacts to birds are not expected to be significant.

Lighting

The current vehicle storage facility projects some ambient level of lighting to which local wildlife, including nocturnal species, have acclimated. However, excessively bright lighting at night could disturb the nesting, foraging, or mating activities of wildlife, primarily birds, and make them more visible to predators. Also night lighting could be disorienting to migratory birds and if placed on tall structures, may increase the likelihood of collision, as discussed below.

Due to the proximity of suitable least Bell's vireo habitat with the proposed project power plant site all lighting would be deflected down and away from all natural habitat (i.e. riparian) adjacent to the site. Staff's proposed Condition of Certification **BIO-7** requires lighting during operations to be designed, installed, and maintained to prevent side casting of light towards the project boundaries to direct light away from biologically sensitive areas. Additionally, Condition of Certification **VIS-4** (Lighting Management Plan – Project Operation), would require that operational lighting is designed to minimize backscatter of light to the night sky and ensure that lighting does not obtrude beyond the project site. Please refer to the **Visual Resources** section of the PSA for more information. With implementation of Conditions of Certification **BIO-7** and **VIS-4**, impacts from operational lighting would be less than significant.

Storm Water Discharge

The proposed power plant site would be 37 percent impervious due to power plant equipment, asphalt paving, crushed rock, high resistivity surfacing and related buildings (CAL 2015b, Appendix 5.15A TN 207160-32). The proposed power plant would have an underground storm drain system that would collect the non-contact storm water flows on-site and route them to the local jurisdiction's storm water collection system or the riparian habitat at the south-west corner of the site that connects to the Santa Clara River (CH2M 2016c, DR-70 Grading Plan Exhibit, TN 213878). Some storm water flows could pick up industrial contaminants. These contaminants would be routed through an onsite oil/water separator before being released to the storm drain collection system and then discharged.

Storm water volumes would be less than the existing site because there are more areas (versus existing conditions) that allow water to percolate into the ground. These areas would contain crushed rock surfacing around foundations and areas where asphalt paving is not required. The primary wastewater collection system would also collect storm water runoff from all plant equipment areas and route it to sumps and the onsite oil-water separator before discharging.

Staff's proposed Condition of Certification **BIO-8** (Streambed Alteration Agreement) includes measures to help prevent debris and contaminants from entering drainages. In addition, Soil & Water staff's proposed Condition of Certification **SOIL&WATER-4** would require the applicant to obtain a National Pollutant Discharge Elimination System permit for industrial waste and storm water discharge to the drainage (i.e. riparian habitat). With implementation of Conditions of Certification **BIO-8** and **SOIL&WATER-4**, potential project impacts from storm water discharge during operation would be less than significant. Any storm water control measures and permits would be incorporated into the Biological Resources Mitigation Implementation and Monitoring Plan (**BIO-6**).

Avian Collision and Electrocution

Birds can collide with gen-tie lines and poles, exhaust stacks, and other structures associated with the proposed project, causing injury or mortality. Bird collisions with power lines and structures generally occur when a power line or other structure transects a daily flight path used by a concentration of birds and these birds are traveling at reduced altitudes and encounter tall structures in their path (Brown 1993). Collision rates generally increase in low light conditions, during inclement weather, during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing danger. Collisions are more probable near wetlands, within valleys that are bisected by power lines, and within narrow passes where power lines run perpendicular to flight paths (APLIC 2012).

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

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

Recent avian monitoring of Sunrise Powerlink has discovered several avian species colliding with power lines (Chris Dellith pers. comm. March 28, 2017). In particular, mortality of the southwestern willow flycatcher occurred through the collision with power lines and is believed to have occurred during nocturnal migration (Ray Bransfield pers. comm. April 19, 2017). In a recent amendment for the Palmdale Energy Project staff determined there would be impacts to the southwestern willow flycatcher and the willow flycatcher from the collision with a 36 mile long transmission line.

Because willow flycatcher and its subspecies the southwestern willow flycatcher are almost identical (that even experts have difficulty distinguishing between the two), staff is including impacts to the willow flycatcher as a factor requiring mitigation in the proposed conditions of certification. The applicant proposes using bird flight diverters along the entire gen-tie line which would help with reducing avian collisions from daytime flights. Unfortunately there is no known deterrent that would prevent collisions during nocturnal migration.

There is a standard death-to-mitigation ratio that has been established by the Bureau of Land Management (BLM) and in the Desert Renewable Energy Conservation Plan (DRECP) for the southwestern willow flycatcher. It requires purchase of 5 acres of nesting habitat per southwestern willow flycatcher death (BLM 2014) and would be re-assessed every 5 years based on annual mortality monitoring. Recovery of the flycatcher would require preserving currently suitable and occupied habitat along with increasing the quantity of suitable nesting habitat (USFWS 2002).

Staff's analysis of potential take for the southwestern willow flycatcher and willow flycatcher follows a similar approach used in the Biological Resources Supplemental Testimony for the Palmdale Energy Project (CEC 2017b TN 216587). Currently there is no standard statistical method to estimate bird deaths from collisions of transmission lines. Staff's calculation is based in part on the calculations used for the Palmdale Energy Project and Desert Sunlight data from FWS (see **Biological Resources Appendix 1**). While this is a very limited sample, it is the most current information available today to assess impacts to southwestern willow flycatcher and willow flycatcher . The U.S. Geological Society is working on a math model that would predict "evidence of absence model". This model would determine how many species die at wind power facilities but would also be applicable for other types of technology that present collision hazard.

Nonetheless, because of the presence of listed species in the adjacent habitat and surrounding area, and the likelihood that they and other special-status birds fly over the project site en route, the applicant proposes to construct the generation tie lines in accordance with the latest Avian Power Line Interaction Committee (APLIC) standards to minimize or avoid collisions and electrocutions associated with the proposed project which staff has incorporated into Condition of Certification **BIO-7**. In addition, proposed Condition of Certification **BIO-12** requires the owner provide funding to an enhancement and restoration program and authorizes incidental take , and **BIO-13** requires obtaining a take exemption from FWS for impacts to federally listed species,

which would reduce impacts to the southwestern willow flycatcher and the willow flycatcher along with other migratory birds to less than significant.

Air Emissions – Nitrogen Deposition

California ecosystems known to be sensitive to nitrogen deposition include coastal dunes, wetlands, serpentine soils, grasslands, and coastal sage scrub (Weiss 2006). As mentioned earlier in this PSA the only sensitive vegetation community is riparian habitat which is not considered sensitive to nitrogen deposition. Therefore there are no nitrogen deposition impacts from the proposed project.

CUMULATIVE IMPACTS AND MITIGATION

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

Cumulative Impact Thresholds

Thresholds are used to determine whether cumulative impacts are significant. The evaluation of cumulative impacts to plant and animal species, sensitive plant communities, waters and wetlands, and habitat connectivity must consider the proposed Mission Rock project, as well as recently approved, present, and reasonably foreseeable probable future projects that may directly or indirectly impact the afore-mentioned resources.

Staff considered several projects within the vicinity of the proposed project, including projects that may result in the removal of riparian vegetation or those that could overlap potential noise impacts of the proposed project. Projects included for analysis are the Northbank, Airport Condo Modification, and Heritage Valley Parks Specific Plan Draft Program EIR. Full descriptions (where available) can be found in the **Executive Summary** of this document. Projects were excluded from analysis if they were determined to have no biological resources present on-site or adjacent the project, if they were to occur within highly developed areas, and based on known construction timing of the projects.

The proposed power plant site is a developed site and provides no habitat for special-status species; however, riparian areas in the vicinity provide habitat for breeding birds including least Bell’s vireo and western yellow-billed cuckoo. Direct cumulative effects could include loss of riparian habitat. Indirect cumulative effects could include disruption from noise, lighting, and storm water runoff. Implementation of Conditions of Certification **BIO-1** through **BIO-9** would minimize or avoid construction-related impacts from lighting and storm water runoff from Mission Rock.

Mission Rock construction noise in combination with noise from other proposed projects could result in cumulative impacts to least Bell's vireo and other migratory bird species. Condition of Certification **BIO-8** would require the project owner to start construction an hour after sunrise and stop an hour before sunset and would not allow any construction of the gen-tie to occur from February 1 (January 1 for raptors) through September 15 during the avian breeding season. Proposed Condition of Certification **BIO-11** would require least Bell's vireo protocol surveys, monitoring, noise reduction measures and visual blocking, authorize incidental take, and require funding a habitat enhancement and/or restoration program.

Proposed Condition of Certification **BIO-13** would demonstrate compliance with the Endangered Species Act by requiring the owner show proof of obtaining a take exemption from FWS for impacts to least Bell's vireo, western yellow-billed cuckoo, and southwestern willow flycatcher. With implementation of Conditions of Certification **BIO-8**, **BIO-11**, and **BIO-13**, the proposed project's contribution to noise impacts at locations with noise sensitive biological resources would not contribute considerably to cumulative effects. The projects identified in staff's cumulative project list were too far in distance from the proposed project, and would likely not result in impacts that overlap spatially or geographically with the proposed project. No other projects with similar indirect cumulative effects were identified during staff's cumulative analysis, and the proposed project impacts would not be expected to be cumulatively significant with mitigation required for effects such as lighting, invasive weeds, or storm water (Conditions of Certification **BIO-1** through **BIO-9**).

The proposed project would not contribute considerably to cumulative effects to biological resources.

COMPLIANCE WITH LORS

The proposed project must comply with LORS that address state and federally listed species, as well as other sensitive biological resources. The project's compliance with applicable LORS is discussed in **Biological Resources Table 3, Conformance with Law, Ordinances, Regulations, and Standards**.

Biological Resources Table 3
Conformance with Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description	Compliance Determination	Discussion
Federal			
Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Take of federally listed species as defined in the Act is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or Section 10 Habitat Conservation Plan. The administering agencies are the FWS and National Marine Fisheries Service.	Yes	Impacts to federally listed least Bell's vireo and southwestern willow flycatcher. **BIO-13** would require proof of obtaining take exemption from FWS.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird including nests with viable eggs). The administering agency is the FWS.	Yes	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists are available during construction and to conduct pre-construction surveys. **BIO-8** ensures no construction of the gen-tie during the breeding season and other linear facilities in or within 500 feet of riparian habitat. **BIO-9** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found.
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into Waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants.	Yes	No Waters of the U.S. would be impacted by the project.
State			

Applicable LORS	Description	Compliance Determination	Discussion
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species. The administering agency is CDFW.	Yes	Condition of Certification **BIO-8** ensures no construction of the gen-tie during the breeding season and other linear facilities in or within 500 feet of riparian habitat. **BIO-9** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. **BIO-10** protects burrowing owl by requiring pre-construction surveys and avoidance measures following CDFW 2012 guidelines. **BIO-11** requires least Bell's vireo protocol surveys, monitoring of nests if present, authorizes incidental take should take occur, and requires funding to improve occupied habitat for any impacts to state listed species. **BIO-12** authorizes incidental take for southwestern willow flycatcher and willow flycatcher mortalities and requires funding for habitat enhancement and/or restoration of occupied habitat to mitigate impacts.

Applicable LORS	Description	Compliance Determination	Discussion
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered. The administering agency is CDFW.	Yes	Impacts to state-listed species would be less than significant with conditions of certification. **BIO-8** ensures no construction of the gen-tie during the breeding season and other linear facilities in or within 500 feet of riparian habitat. **BIO-9** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. **BIO-10** protects burrowing owl by requiring pre-construction surveys and avoidance measures following CDFW 2012 guidelines. **BIO-11** requires least Bell's vireo protocol surveys, monitoring of nests if present, authorizes incidental take should take occur and requires funding to improve occupied habitat for any impacts to state listed species. **BIO-12** authorizes incidental take for southwestern willow flycatcher and willow flycatcher mortalities and requires funding for habitat enhancement and/or restoration of occupied habitat to mitigate impacts.
Fully Protected Species (Fish and Game Code sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also Title 14, California Code of Regulations, section 670.7). The administering agency is CDFW.	Yes	There are no impacts to fully protected species associated with the project.

Applicable LORS	Description	Compliance Determination	Discussion
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. The administering agency is CDFW.	Yes	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists are available during construction and to conduct pre-construction surveys. **BIO-8** ensures no construction of the gen-tie during the breeding season and other linear facilities in or within 500 feet of riparian habitat. **BIO-9** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. **BIO-10** protects burrowing owl by requiring pre-construction surveys and avoidance measures following CDFW 2012 guidelines. **BIO-5** requires the project owner to implement a Worker Environmental Awareness Program (WEAP) to educate workers about compliance with environmental regulations, including Fish and Game Code.

Applicable LORS	Description	Compliance Determination	Discussion
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds. The administering agency is CDFW.	Yes	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists are onsite during construction and to conduct pre-construction surveys. Condition of Certification **BIO-8** ensures no construction of the gen-tie during the breeding season and other linear facilities in or within 500 feet of riparian habitat. Condition of Certification **BIO-9** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. **BIO-10** protects burrowing owl by requiring pre-construction surveys and avoidance measures following CDFW 2012 guidelines. **BIO-5** requires the project owner to implement a WEAP to educate workers about compliance with environmental regulations, including Fish and Game Code.
Lake and Streambed Alteration Agreement (Fish and Game Code sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process. The administering agency is CDFW.	Yes	Condition of Certification **BIO-8** ensures qualified biologist are present to protect riparian and creek habitat.

Applicable LORS	Description	Compliance Determination	Discussion
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	The Native Plant Protection Act designates state rare and endangered plants and provides specific protection measures for identified populations. The act also includes a salvage provision, enabling CDFW to collect rare and endangered plants from properties in advance of construction or other activities that would destroy the plants. The administering agency is the CDFW.	Yes	There are no impacts to state rare or endangered plants associated with this project.
Local			
Ventura County General Plan Biological Resources Policies (1-6) & Programs (1-4); Ventura County Tree Protection Regulations Section 8107-25 and Tree Protection Guidelines	The Ventura County General Plan encourages preservation and protection of significant biological resources in Ventura County from incompatible land uses and development. Significant biological resources include endangered, threatened or rare species and their habitats, wetland habitats, coastal habitats, wildlife migration corridors and locally important species/communities.	Yes	Conditions **BIO-1** through **BIO-14** protect sensitive habitats and listed species

With implementation of staff's proposed conditions of certification, the proposed project would comply with all LORS pertaining to biological resources. Conditions of Certification **BIO-1** through **BIO-7** pertain to minimization of general construction impacts to plants, wildlife, and habitat. These conditions minimize and avoid any indirect impacts such as introduction of invasive species offsite. Condition of Certification **BIO-8** protects streams and surrounding riparian habitat by preventing introduction of invasive plants and wildlife, the revegetation of disturbed areas with native riparian species, and mitigating impacts by restoring and monitoring disturbed areas with native riparian vegetation. Condition of Certification **BIO-9** requires pre-construction surveys for nesting birds adjacent to the project site and linears, and installation of an appropriate buffer if nesting birds are found, ensuring compliance with the federal Migratory Bird Treaty Act. Condition of Certification **BIO-10** protects burrowing owl by requiring pre-construction surveys and avoidance measures following the most recent CDFW guidelines. Condition of Certification **BIO-11** requires least Bell's vireo protocol surveys to determine nesting pair(s) and daily monitoring if present. If nesting pair(s) are found and nest failure of an active nest occurs from construction noise, the condition authorizes incidental take and requires funding existing programs that enhance and restore least Bell's vireo occupied habitat thus mitigating impacts to least Bell's Vireo,.

Condition of Certification **BIO-13** requires that the applicant obtain a take exemption from FWS for the least Bell's vireo, western yellow-billed cuckoo, and southwestern willow flycatcher as required by the Endangered Species Act. Condition of Certification **BIO-14** requires mitigation for the removal of native trees.

CONCLUSIONS

The project site and laydown area is a developed brownfield site. The majority of the gas and water lines would disturb ruderal and agricultural lands. The gen-tie would impact 0.216 acres of riparian and coastal sage scrub. The majority of the development occurs on a developed site. Special-status wildlife are not expected to occur on the site; however, habitat to the west of the site is considered sensitive and supports suitable nesting habitat for least Bell's vireo (state and federally listed endangered) and riparian habitat near gen-tie pole #3 is suitable habitat for western yellow-billed cuckoo as well as other migratory bird species. In addition, collisions would occur with the gen-tie from nocturnal migration of southwestern willow flycatcher and willow flycatcher. Given the proximity of the proposed project to the aforementioned biological resources, construction and operation would result in the direct and indirect effects presented in **Biological Resources Table 4**.

Biological Resources Table 4
Summary of Impacts to Biological Resources from the Proposed Project

Impact	Condition of Certification	Significance Determination
CONSTRUCTION IMPACTS		
Riparian Habitat and Streambed Alteration Agreement: removal of riparian habitat	• **BIO-1 through BIO-4** dictate the selection and duties of a Biological Monitor(s) and Designated Biologist to mark sensitive biological areas and oversee construction • **BIO-5** requires development and implementation of a Worker Environmental Awareness Program • **BIO-6** requires development of a Biological Resources Mitigation Implementation and Monitoring Plan which incorporates all state and federal permit conditions • **BIO-7** requires implementation of measures to follow during all stages of construction to avoid and minimize impacts to species • **BIO-8** requires nesting bird protection and surveys, habitat protection, authorized use of herbicides, sediment and erosion control, equipment access, litter, pollution, and cleanup, exotic species removal and control, and mitigation	Less than significant with implementation of conditions of certification

Impact	Condition of Certification	Significance Determination
Noise: potential nest failure resulting in "take" of least Bell's vireo and decreased productivity of special-status birds	• **BIO-1 through 4** dictate the selection and duties of a Designated Biologist and Biological Monitor(s) to mark sensitive biological areas and oversee construction • **BIO-5** requires development and implementation of a Worker Environmental Awareness Program • **BIO-6** requires development of a Biological Resources Mitigation Implementation and Monitoring Plan which incorporates all state and federal permit conditions • **BIO-7** requires implementation of measures to follow during all stages of construction to avoid and minimize impacts to species • **BIO-9** requires pre-construction nest surveys and impact avoidance during nesting season • **BIO-10** protects burrowing owl by requiring pre-construction surveys, appropriate buffers around active burrows, and other avoidance measures • **BIO-11** requires least Bell's vireo protocol surveys and if nesting pair(s) are present daily monitoring and if the nest is abandoned, "take" would result, then it authorizes incidental take and requires compensation for impacts to least Bell's vireo • **BIO-13** requires a take exemption from the U.S. Fish and Wildlife Service	Less than significant with implementation of conditions of certification
Special-status wildlife: disturbance from lighting and stormwater runoff	• **BIO-1 through BIO-4** dictate the selection and duties of a Designated Biologist and Biological Monitor(s) to oversee mitigation and perform monitoring of sensitive resources • **BIO-7** confines work to delineated areas and controls invasive weeds • **BIO-8** requires pre-construction nest surveys and impact avoidance • **SOIL&WATER-1** requires a Stormwater Pollution Prevention Plan to control runoff and prevent contamination • **VIS-3** requires lighting to be hooded and shielded and task specific • **VIS-4** prevents light beyond project boundary	Less than significant with implementation of conditions of certification
Invasive species: destroy wildlife habitat and forage, increase soil erosion	• **BIO-7** controls invasive weeds includes restoration of disturbed areas • **BIO-8** includes measures to control exotic species (plants and wildlife)	Less than significant with implementation of conditions of certification
OPERATION IMPACTS		
Native vegetation (Streambed Alteration Agreement): trimming and removal of riparian habitat for maintenance	• **BIO-1 through BIO-4** dictate the selection and duties of a Biological Monitor(s) and Designated Biologist to mark sensitive biological areas and oversee tree trimming and removal during operations • **BIO-8** ensures protection of breeding birds in riparian habitat near the gen-tie during the trimming and removal of tree branches and limbs during	Less than significant with implementation of conditions of certification

Impact	Condition of Certification	Significance Determination
	operations	
Lighting: disturbance resulting in altered behavior or increased predation	• **BIO-7** requires all lighting to be downcast and at the lowest intensity required • **VIS-3** hooded and shielded lighting and motion sensors so lights are off when not in use • **VIS-4** minimizes offsite lighting	Less than significant implementation of conditions of certification
Avian collision and electrocution: injury or mortality	• **BIO-7** minimizes electrocution risk by complying with APLIC design standards • **BIO-12** authorizes incidental take and requires mitigation for impacts to southwestern willow flycatcher and willow flycatcher • **BIO-13** requires take exemption from the U.S. Fish and Wildlife Service for federally listed species	Less than significant with implementation of conditions of certification

PROPOSED CONDITIONS OF CERTIFICATION

Staff proposes the following Biological Resources conditions of certification:

DESIGNATED BIOLOGIST SELECTION

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission compliance project manager (CPM) for approval. A Designated Biologist shall be retained by the owner for the life of the project.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; or demonstrates that the proposed Designated Biologist or alternate has the necessary training and skills to identify sensitive biological resources found in the project area; and

2. Three years of experience in field biology; and

3. At least one year of field experience with biological resources found in or near the project area; and

4. Demonstrated field experience in the identification and life history of least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and western burrowing owl; and

5. Be in possession of required state and federal permits and/or approvals from California Department of Wildlife (CDFW) and US Fish and Wildlife (FWS).

Verification: The project owner shall submit the specified information for the Designated Biologist at least 60 days prior to the start of any site assessment and pre-construction activities. No site assessment and pre-construction activities or site mobilization and construction, shall commence until a Designated Biologist has been approved by the CPM.

If a Designated Biologist is replaced, the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

DESIGNATED BIOLOGIST DUTIES

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

1. Advise the project owner's construction and operation managers on the implementation of the biological resources conditions of certification;

2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;

3. Develop a Worker Environmental Awareness Program and may be assisted by a Biological Monitor(s) during its development and implementation.

4. Prepare and submit a stand-alone biological resources report to be included in the Monthly Compliance Reports (MCRs) and Annual Compliance Reports (ACRs) as an appendix;

    - See BIO-7 #19 for specific information that shall be provided in the MCRs and ACRs.

5. 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;

6. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

7. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Inspect or direct the Biological Monitor and/or site personnel how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;

8. Notify the project owner and the CPM within 24 hours of any non-compliance with any biological resources condition of certification;

9. Respond directly to inquiries of the CPM regarding biological resource issues;

10. Maintain written records of the tasks specified above and those included in the Biological Resources Mitigation Implementation and Monitoring Plan. Summaries of these records shall be submitted as a stand-alone report included in the appendix of the MCRs and ACRs;

11. Train the Biological Monitors and ensure their familiarity with the conditions of certification, Biological Resources Mitigation Implementation and Monitoring Plan, Worker Environmental Awareness Program (WEAP) training, and all other permits;

12. Maintain the ability to be in regular, direct communication with representatives of CDFW, FWS, and CPM, including notifying these agencies of dead or injured listed species and reporting special status species observations to the California Natural Diversity Database (CNDDB) by completing and filing the CNDDB reporting form;

13. If actions during operations may affect biological resources, the Designated Biologist shall be present and available for monitoring these activities and report them in the ACR;

14. Provide a Specimens Captured/Salvaged Report form. See CDFW scientific collection website for the most up to date reporting form.

Verification: The Designated Biologist shall submit in the monthly compliance report to the CPM, copies of all written reports, summaries that document construction activities that have the potential to affect biological resources, and tasks specified in the BRMIMP including copies of CNDDB forms provided to the CNDDB.

During project operation, the Designated Biologist(s) shall submit record summaries and the Specimens Captured/Salvaged Report form in the annual compliance report. The Designated Biologist shall provide the CPM copies of CNDDB forms sent to CNDDB in the MCRs and ACRs.

BIOLOGICAL MONITOR SELECTION AND QUALIFICATIONS

BIO-3 The CPM-approved Designated Biologist shall submit the resume(s), at least three references, and contact information of the proposed Biological Monitors to the CPM for approval (in consultation with CDFW). Biological monitor(s) may assist but do not supplant Designated Biologists, and are not required. The resume(s) shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks:

1. Demonstrated field experience in the identification and life history of one or more of the following species: Least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and western burrowing owl; and

2. Demonstrated field experience identifying wildlife (including avian) species found in the project area as identified in the Commission Decision; and

3. At least one year of field experience with biological resources found in or near the project area; and

4. At least 2 years of experience in field biology; and

5. Be in possession of required state and federal permits and/or approvals from CDFW and FWS if handling species.

Verification: The project owner's approved Designated Biologist shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site assessment and pre-construction activities. The Designated Biologist shall submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval at least 14 days prior to their first day of monitoring activities.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

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

If required by the Designated Biologist and Biological Monitor(s) the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.

The Designated Biologist or Biological Monitor shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to any special-status biological resources (those that have significance under CEQA) if the activities continued;

2. Inform the project owner and the construction/operation manager when to resume activities; and

3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage.

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

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor shall notify the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance with biological resources conditions of certification or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities with the potential to adversely impact any special-status biological resources. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem, and shall respond to any CPM verbal or written requests for information in a timely manner.

WORKER ENVIRONMENTAL AWARENESS PROGRAM

BIO-5 The project owner shall develop and implement a project-specific Worker Environmental Awareness Program (WEAP). The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, and subcontractors. The WEAP shall be implemented during site assessment, pre-construction, site mobilization, construction, operation, and closure.

The WEAP shall include the following elements.

1. The WEAP shall be put into action prior to the beginning of any site related activities, including but not limited to surveying, mobilization, fencing, grading, or construction activities, and implemented throughout the duration of project construction and operations.

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

3. The WEAP, shall include, at a minimum, the following items: training materials and briefings shall include but not be limited to: a discussion of the Endangered Species Act, California Endangered Species Act, other

   regulations; the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; hazardous substance spill prevention and containment measures; a contact person and phone number in the event of the discovery of dead or injured wildlife or sighting of special-status species; and a review of mitigation requirements.

   A discussion of measures to be implemented for avoidance of the sensitive resources discussed above and the identification of an onsite contact in the event of the discovery of sensitive species on the site; this will include a discussion on microtrash.

4. Protocols to be followed when road kill is encountered in the work area or along access roads and the identification of an onsite representative to whom the road kill will be reported.

5. Maps showing the known locations of special-status wildlife, populations of rare plants and sensitive vegetation communities, seasonal depressions and known waterbodies, wetland habitat, exclusion areas, and other construction limitations (e.g. limited operating periods, etc.). These features shall be included on project plans and specifications drawings.

6. Literature and photographs or illustrations of potentially occurring special-status plant and/or wildlife species will be provided to all project contractors and heavy equipment operators.

7. Evidence that all onsite construction and security personnel have completed the WEAP prior to the start of site mobilization. A special hardhat sticker or wallet size card shall be issued to all personnel completing the training, which shall be carried with the trained personnel at all times while on the project site. All new personnel shall receive this training and may work in the field for no more than 5 days without participating in the WEAP. A log of all personnel who have completed the WEAP training shall be kept on site.

8. A weather protected bulletin board or binder shall be centrally placed or kept on site (e.g., in the break room, construction foreman's vehicle, construction trailer, etc.) for the duration of the construction. This board or binder will provide key provisions of regulations or project conditions as they relate to biological resources or as they apply to grading activities. This information shall be easily accessible for personnel in all active work areas.

9. Develop a standalone version of the WEAP, that covers all previously discussed items above, and that can be used as a reference for maintenance personnel during WEAP operations.

10. Discuss the locations and types of special-status biological resources on the project site and adjacent areas, explain the reasons for protecting

    these resources, and the function of staking, flagging, fencing, and/or barriers and designating special-status biological resources and authorized work areas;

11. Discuss federal and state laws afforded to protect the special-status species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., Endangered Species Act);

12. Place special emphasis on the least Bell's vireo, southwestern willow flycatcher, willow flycatcher, western yellow-billed cuckoo, Catalina mariposa lily, western burrowing owl, horned lark, red-tailed hawk, white-tailed kite, American badger, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;

13. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;

14. Present the meaning of various temporary and permanent habitat protection measures;

15. Identify whom to contact if there are further comments and questions about the material discussed in the program; and

16. The project owner shall provide the training acknowledgment form signed by each worker indicating that they received the WEAP training and shall abide by the guidelines in the MCRs. Also include 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.

17. The WEAP shall routinely be administered to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area within no more than 5 days of their arrival. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CPM upon request and shall be provided in the MCRs and ACRs. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

18. During project operation, the WEAP shall be repeated annually for permanent employees. Signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

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

Verification: At least 45 days prior to the start of any site assessment and pre-construction activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. The WEAP shall be approved by the CPM prior to their use and finalized prior to any site assessment and pre-construction activities. At least 10 days prior to site assessment and pre-construction activities, the project owner shall provide the CPM a copy of the CPM-approved final WEAP.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-6 The project owner shall develop and implement a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). The project owner shall provide a copy of the CPM-approved BRMIMP to CDFW and FWS. The BRMIMP shall be prepared by the Designated Biologist and shall include the following:

1. All biological resource conditions of certification, mitigation measures, and their implementation methods identified in the Commission Decision;

2. All biological resource mitigation, monitoring, and compliance measures required in other state or federal agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;

3. A discussion of all special-status biological resources that could be impacted by project, construction, operation, and closure;

4. A detailed description of measures that shall be taken to avoid, minimize, and/or mitigate impacts on each special-status species potentially impacted by, construction, operation, and closure activities;

5. All locations on a map, at an approved scale, of special-status biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

6. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction;

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

8. Performance standards to be used to help decide if/when proposed mitigation and conditions are or are not successful;

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

10. A discussion of biological resources-related facility closure measures;

11. A process for proposing plan modifications to the CPM for review and approval;

12. Acknowledgement that implementation of the BRMIMP measures shall be reported in the MCRs (e.g. survey results, construction activities that were monitored, species observed);

13. Provision of a Construction Closure Report at the close of construction that will identify which items of the BRMIMP have been completed and which items are still outstanding; and

14. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys to the California Natural Diversity Database (CNDDB), per CDFW requirements.

Verification: The project owner shall provide the BRMIMP to the CPM for review and approval at least 45 days prior to start of any site assessment, pre-construction activities, site mobilization, and construction. The project owner shall provide final approved copies of the BRMIMP to the CPM, CDFW and FWS.

If there are any permits that have not yet been received when the BRMIMP is first submitted, copies of these permits shall be submitted to the CPM within 5 days of their receipt, and a revised BRMIMP shall be submitted to the CPM within 10 days of receipt of permits by the project owner.

Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written Construction Closure Report.

Within 30 working days of sighting any special-status species provide 1 copy of the CNDDB forms and maps to CNDDB, either online or via mail to (South Coast Region 5) 3883 Ruffin Road, San Diego, CA 92123, and to the CPM.

GENERAL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

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

1. Work activities on the gen-tie or on the process water supply line and natural gas pipeline within 500 feet of riparian habitat shall occur between September 16 through January 31 or in the case of nesting raptors September 16 through January 1.

2. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of

   spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. All stakes, flagging, fencing or barriers shall be removed from the project site and vicinity of any streams upon completion of project construction activities.

3. Spoils shall be stockpiled in disturbed areas, which do not provide habitat for special-status species.

4. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas. Vehicles and equipment shall be parked on pavement, existing roads, previously disturbed areas, and areas permanently or temporarily disturbed as part of the project to the extent practicable.

5. At the end of each work day, the Designated Biologist, Biological Monitor, and/or site personnel shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been covered with plywood or similar materials or backfilled. Trenches, bores, and other excavations shall be inspected by the Designated Biologist for entrapped wildlife each morning prior to onset of construction activities and immediately prior to covering with plywood at the end of each working day. If wildlife is trapped, they will immediately notify the Designated Biologist and/or Biological Monitor.

If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at an angle no greater than 30 degrees 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 holding the appropriate permits (if required) 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. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested P*ractices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012) to reduce the likelihood of large bird electrocutions and collisions.

7. Bird flight diverters shall be installed on the transmission line. They shall be inspected annually to ensure the diverters are positioned properly, are intact, replaced if broken or defective, and maintained for the full length of the transmission line for the life of the facility.

8. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

9. Facility lighting during operations 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. riparian habitat adjacent to project site or other work areas). FAA visibility lighting shall employ only strobed, strobe-like or blinking incandescent lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" duel strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used.

10. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract predators to construction sites. During construction, site personnel shall patrol these areas to ensure water does not puddle and attract wildlife to the site, and shall take appropriate action to reduce water application rates where necessary.

11. Report all inadvertent deaths of special-status species to the Designated Biologist or Biological Monitor, including road kill. Species name, physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted on a Wildlife Observation Form and reported in the MCRs.

For special-status species, the Designated Biologist or Biological Monitor shall contact CDFW and FWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. Injured animals shall be reported to CDFW and/or FWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or FWS. During construction and operations, injured or dead animals detected by personnel in the project area shall be reported immediately to a Biological Monitor or Designated Biologist, who shall remove the carcass or injured animal promptly.

12. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed immediately of any hazardous material or waste leaks. Servicing of construction equipment shall take place only at designated areas.

13. All general trash, food-related trash items (e.g., wrappers, cans, bottles, food scraps, cigarettes, etc.) and other human-generated debris shall be stored in trash receptacles with secure lids (wildlife proof) and/or removed from the site each day. No deliberate feeding of wildlife will be allowed. Workers shall not feed wildlife or bring pets to the project site.

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

15. Use of chemicals, fuels, lubricants, or biocides will be in compliance with all local, state and federal regulations. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental

    Protection Agency, California Department of Food and Agriculture, and other state and federal legislation, as well as additional project-related restrictions deemed necessary by the FWS and CDFW. Use of rodenticides is restricted in areas that may support special status wildlife.

16. Standard best management practices (BMPs) from the project Storm Water Pollution Prevention Plan shall be implemented during all phases of the project (construction, operation, and decommissioning) where storm water run-off from the site could enter adjacent marshes or channels. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the jurisdictional waters.

    All disturbed soils within the project site shall be stabilized to reduce erosion potential, both during and following construction. (See **SOIL & WATER-1, SOIL & WATER-2 and SOIL & WATER-3)**

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

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

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

18. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications must follow EPA label instructions, minimize use of rodenticides and herbicides in the project area, and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area or adjacent wetlands. If rodent control must be conducted, zinc phosphide, an equivalent product, or live trapping shall be used.

19. The project owner shall install silt fencing or similar barrier along the perimeter of the project site adjacent to riparian habitat. Silt fencing or similar barrier shall be inspected weekly or after significant rain events by the Designated Biologist or Biological monitor, and shall be maintained in good condition, with no holes or gaps. If sedimentation occurs along the fence due to normal siltation processes, the silt fencing or similar barrier may be removed, with permission from the CPM.

20. Compliance with BMPs will be documented and provided in a written report to be included with the MCR and on an annual basis as part of the ACR. The report shall include a summary of the construction and operational activities completed, a review of the sensitive plants and wildlife encountered, a list of compliance actions and any remedial actions taken to correct the actions, and the status of ongoing mitigation efforts.

21. Implementation of the conditions of certification measures shall be reported by the Designated Biologist in the MCRs and ACRs. The information reported shall contain monitored mitigation measures and permit conditions; summary of activities; daily notes and observations;

a cumulative species list with a note for which species were seen during that month and a column for comments as to what activity each species was doing at the time of observation; site photos (e.g. nest sites, species sightings if possible, exclusion areas, new bmp measures etc.); and wildlife observation forms. The Daily notes and observations shall include the following: dates of site visits, names of who conducted the site visits, areas visited, activities biologist completed, whether the project was in compliance with all COCs and if not an explanation of why and the proposed resolution.

22. A Site Restoration Plan shall be developed for the restoration of temporarily disturbed areas. The Site Restoration Plan shall include the following:

    a. Goals and objectives of the restoration;

    b. Description of methods employed to achieve the restoration goals and objectives;

    c. Success criteria used to determine if the restoration is successful;

    d. A monitoring and maintenance program including details on remedial measures;

    e. A weed control program for noxious and invasive weeds;

    f. A description for reporting (e.g. quarterly, annually, etc.)

    g. A restoration implementation and monitoring timeline and schedule of planned activities.

Verification: 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. Ninety days after the beginning of construction of the gen-tie line the project owner shall submit a draft Site Restoration Plan to the CPM. A Final Site Restoration Plan shall be provided within 60 days of receipt of comments from the CPM or before the end of construction whichever is earlier.

STREAMBED ALTERATION AGREEMENT

BIO-8 The project owner shall implement Best Management Practices and other measures described below to protect jurisdictional waters of the State and associated riparian habitat occurring adjacent to the project power plant site and along linear alignments (e.g. Todd and Ellsworth barrancas). The term “work” will be defined as all site assessment, pre-construction activities, site mobilization, and ground disturbing construction activities. Work areas will be clearly marked on maps and plans.

The project owner shall implement the following measures to minimize impacts to waters of the state and riparian vegetation:

1. Check for Wildlife in Pipes/Construction Materials. The Designated Biologist shall visually check sections of pipe/construction materials for the presence of wildlife sheltering within them prior to the sections being placed in the trench and attached together, or shall have the ends capped while stored on site so as to prevent wildlife from entering. After attachment of the pipe sections to one another, whether in the trench or not, the exposed end(s) of the pipeline shall be capped at the end of each day during construction to prevent wildlife from entering and being trapped within the pipeline. Exclusionary devices shall be erected to prevent the migration into, or the return of species into, the work areas if determined appropriate and feasible by the Designated Biologist. Such exclusionary devices shall be checked by Designated Biologist on a daily basis to check/ensure continued exclusionary device effectiveness.

2. Non-listed Special Status Species and other vertebrates. The Designated Biologist shall be present during work in and near all jurisdictional waters of the State during all vegetation-removal and rough grading activities to monitor for non-listed special-status and/or common ground-dwelling vertebrates encountered in the path of project-related activities. The Designated Biologist shall make every effort to relocate the species out of harm's way to the extent feasible by doing one of the following: (1) Utilize shovel, rake, or similar hand tool to gently re-direct the animal out of work area; (2) Install silt fence or other exclusionary fencing to prevent species from re-entering disturbance area; and (3) If the Designated Biologist has the appropriate handling permits, capture/relocate species to appropriate habitat outside the disturbance area. The Designated Biologist shall have the authority to temporarily stop construction activities until the species is determined to be out of harm's way.

3. Pre-Construction Surveys. The Designated Biologist shall conduct a pre-construction survey no more than 2 weeks prior to start of work within 500 feet of jurisdictional waters of the State and riparian habitat to confirm the presence/absence of special status species likely to be found in the area or using the area to forage during the proposed construction activities. Survey results shall be summarized and provided to the CPM and CDFW prior to the start of work. Survey limits shall be determined by the Designated Biologist and shall include all areas within the project footprint. If surveys yield information pertaining to any new resource impacts, the CPM shall be consulted immediately. Survey results, including negative findings, analysis, and recommendations, along with the field notes, shall be provided to the CPM and CDFW prior to commencing construction.

These surveys are intended to record any general wildlife and botanical observations, determine the presence and activity of any species of special concern or any threatened or endangered species, document area of surface water, check bridges and/or culverts to determine if bats or birds are nesting/roosting, visually check pipes and construction materials for the presence of wildlife sheltering within them, and identify suitable relocation areas for any host of species that need to be moved out of harm's way during construction. Should any special status species be found during pre-project surveys and work must be done in identified areas during sensitive periods, the project owner shall develop and implement a plan for the protection of these species, which may include plans for relocation of these species. This plan shall be approved by the CPM prior to commencing work. The results of any surveys and any protective measures instituted as a part of a protection and monitoring plan shall be provided to the CPM and the CDFW within one week from implementation.

Nesting Bird Protection and Surveys

4. Nesting Birds. Project owner shall not remove or otherwise disturb vegetation or conduct any gen-tie, water supply pipeline, and natural gas pipeline work activities in or within 500 feet of riparian habitat, from February 1 (January 1 for raptors) to September 15 to avoid impacts to special-status species (e.g. least Bell's vireo, western yellow-billed cuckoo) and breeding/nesting birds.

Habitat Protection

5. Demarcate Work Area Boundary. The Designated Biologist shall demarcate the outer perimeter of the work area to prevent damage to adjacent habitat and to provide visual orientation to its limits. Marking shall be in place during all periods of construction. All persons employed or otherwise working on the project site shall be instructed about the restrictions that the marking represents. Upon completion of project activities all temporary flagging, fencing, and/or barriers shall be removed from the project site and vicinity of the stream.

6. Vegetation Removal. Disturbance or removal of vegetation shall be kept to the minimum necessary to complete project-related activities.

7. Hours of Operation and Lighting. Construction activities shall take place during daylight hours only. No night work or lights are authorized. Work is allowed one hour after sunrise, and shall stop one hour prior to sunset.

8. Herbicide Application. The application of all herbicides will occur in accordance with state and federal law. No herbicides shall be used where Threatened or Endangered species occur. No herbicides shall be used when wind velocities are above 5 miles per hour or when nesting birds could be exposed.

9. No herbicides shall be applied within the project area except for the purpose of killing non-native plants such as giant reed and will be conducted by a certified pesticide applicator following all label restrictions.

10. Concrete – Primary Containment. No concrete or any cement product may be poured within the bed and bank of any drainage.

11. Unauthorized Materials. Any materials placed in seasonally dry portions of a stream that could be washed downstream or could be deleterious to aquatic life shall be removed prior to inundation by high flows.

12. Substrate. Rock, gravel, and/or other materials shall not be imported to, taken from, or moved within the bed and or banks of the stream.

13. Trenching/Excavation. No castings or spoil from the trenching/excavation operations shall be placed on the stream side of the project site.

14. Spoils. Spoil storage sites shall not be located within a stream, where spoils can be washed back into a stream, or where it will cover aquatic or riparian vegetation.

Turbidity and Siltation

15. Erosion Control Measures. Erosion control measures shall be used throughout all phases of construction where sediment runoff from exposed slopes threatens to enter a river, stream, or lake. No plastic netting of any kind shall be used for this project. Any type of erosion control blanket or other product shall not use plastic. Furthermore, any type of erosion control shall be weed-free.

16. Sediment Control. Sediment from project-related activities shall not be placed in upland areas where it might likely be washed into the stream,

    or where it is likely to have a negative impact on emergent native vegetation, or where it is likely to have a negative impact on native trees.

17. Erosion Control. Any erosion control shall exclude the use of plastic or “hard” netting. If netting is to be used, it must be flexible (e.g., “soft” hemp) so that snakes or other animals do not become trapped in the netting.

18. Runoff Control. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

19. Contaminated Site Water. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter a flowing stream, dry ephemeral stream or into storm drains. Such water shall be settled, filtered, or otherwise treated prior to discharge back into the water body. The project owner shall place and maintain silt barriers, such as straw bales, "biologs," or filter fabric silt fencing, around the storm drain inlets until the threat of erosion from surrounding drainage ceases.

Equipment and Access

20. Staging and Vehicle Storage. Staging/storage areas for equipment and materials shall be located outside of jurisdictional waters of the State in a location selected due to its non-vegetated status.

21. Operating Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or adjacent to the ephemeral drainage shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat. No equipment maintenance or fueling shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/lake shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as extra boom, absorbent pads, or skimmers, shall be on site prior to the start of project-related activities. No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow.

Pollution, Litter and Cleanup

22. Remove Cleared Material from Stream. All trimmed or cleared material/vegetation shall be removed from the area and deposited where it cannot re-enter a stream.

23. Pollutants and Debris. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products or any other substances which could be hazardous to aquatic life, or other organic or earthen material from any logging, construction, or other associated project-

related activity shall be allowed to contaminate the soil and/or enter into or placed where it may be washed by rainfall or runoff into waters of the State. Any of these materials, placed within or where they may enter the stream, by the project owner or any party working under contract, or with the permission of the project owner, shall be removed immediately. When project-related activities are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of the stream.

24. Hazardous Substances. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil and/or entering the waters of the state. Any of these materials, placed within or where they may enter the stream by project owner or any party working under contract, or with the permission of project owner, shall be removed immediately.

25. Wash Water. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter the stream or placed in locations that may be subjected to high storm flows.

26. Pick Up Debris. The project owner shall pick up all debris and waste daily. Project owner shall dispose of all project-generated debris, materials and rubbish in a legal manner. The project owner shall remove all human generated debris, such as yard and farm cuttings, broken concrete, construction waste, garbage and trash. The project owner shall remove washed out culverts, and other construction materials, that the project owner places within, or where they may enter, the stream.

27. Spill Clean-up. The clean-up of all spills shall begin immediately. The CPM and the CDFW shall be notified immediately by the project owner of any spills and the CPM (in consultation with CDFW) shall be consulted regarding clean-up procedures. Clean up equipment such as extra boom, absorbent pads, skimmers, shall be on site. The project owner shall have all spill clean-up equipment on site during construction.

Exotic Species Removal and Control

The project owner shall also perform exotic species removal and control as defined by the following measures.

28. Remove Invasive Vegetation by Hand. Whenever practicable, invasive species shall be removed by hand or by hand-operated power tools rather than by chemical means. Where chemical control of non-native vegetation is deemed necessary within the bed or bank of the stream,

29. and there is a possibility that the herbicides could come into contact with water, project owner shall employ only those herbicides which are approved for aquatic use. If surfactants are required, they shall be restricted to non-ionic chemicals that are approved for aquatic use. Nothing in this condition of certification represents an herbicide use recommendation that allows for an action that conflicts with pesticide use regulations. All herbicide use conditions for mixing, application, and clean-up shall conform to all applicable federal, state, and local regulations. Any application of herbicide shall be done by a licensed or certified applicator in accordance with all applicable federal, state, and local LORS. Herbicides shall be used only for selective treatment of non-native vegetation identified as invasive by California Invasive Plant Council. Herbicide use to kill native vegetation is prohibited.

30. Invasive Plant Control/Eradication. To minimize the spread of invasive plant species to uninfested areas within and outside of the project site, the project owner shall implement control and eradication activities prior to the initiation of ground-disturbing activities. The project owner shall utilize control and eradication methods that are specific to the target species, avoid the spread and proliferation of other invasive plant species, and minimize damage to and/or removal of native plant species. All nonnative and invasive plants controlled or eradicated at the project site shall be removed and disposed of in a manner that prevents the introduction and establishment of those species to new areas.

31. Invasive Species Education Program. The project owner shall conduct an Invasive Species Education Program as part of the WEAP for all persons working within the project site prior to the commencement of any project activities during the pre-construction meeting. Additionally, this instruction shall be included for any new workers starting work after initial commencement of project activities prior to their performing any work within the project site. The program shall consist of a presentation from a qualified biologist that includes a discussion of the invasive species currently present within the project site as well as those that may pose a threat to, or have the potential to, invade the project site. The discussion shall include a physical description of each species and information regarding their habitat preferences, local and statewide distribution, modes of dispersal, and impacts.

    The program shall also include a discussion of BMPs to be implemented at the project site to avoid the introduction and spread of invasive species into and out of the project site. The program shall be repeated annually for projects extending more than one year. Copies of program materials shall be maintained at the project site for workers to reference as needed and shall be provided to any new workers prior to their performing any work within the project site. For this requirement an electronic copy of the program materials shall suffice.

32. Invasive Species. The project owner shall conduct project activities in a manner that prevents the introduction, transfer, and spread of invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, bacteria, etc.), from one project site and/or watershed to another. Prevention BMPs and guidelines for invasive plants can be found on the California Invasive Plant Council's website at: http://www.cal-ipc.org/ip/prevention/index.php and for invasive mussels and aquatic species can be found at the Stop Aquatic Hitchhikers website: http://www.protectyourwaters.net/.

33. Inspection of Project Equipment. The project owner shall inspect all vehicles, tools, waders and boots, and other project-related equipment and remove all visible soil/mud, plant materials, and animal remnants prior to entering and exiting the stream and/or between each use in different watersheds.

34. Decontamination of Project Equipment. The project owner shall decontaminate all tools, waders and boots, and other equipment that will enter the stream and make contact with water or wetted soils prior to entering and after exiting the stream. If equipment is operating to avoid contact with water or wetted soils, then it is otherwise permissible to conduct the work without specialized decontamination procedures for aquatic invasive animal species, but activities would need to be in compliance with other conditions of certification and any other federal, state, or local LORS. For example, general conditions in the existing Agreement to make sure visible dirt, mud, and plant materials are removed from equipment prior to entering the stream, but do not require the specialized thermal, freezing, and/or drying methods developed for aquatic invasive animal species.

    If decontamination for aquatic invasive animal species is applicable, the project owner shall decontaminate project gear and equipment utilizing one of three methods: drying, using a hot water soak, or freezing, as appropriate to the type of gear or equipment. For all methods, the project owner shall begin the decontamination process by thoroughly scrubbing equipment, paying close attention to small crevices such as boot laces, seams, net corners, etc., with a stiff-bristled brush to remove all organisms. To decontaminate by drying, the project owner shall allow equipment to dry thoroughly (i.e., until there is a complete

    absence of water), preferably in the sun, for a minimum of 48 hours. To decontaminate using a hot water soak, the project owner shall immerse equipment in 140°F or hotter water and soak for a minimum of 5 minutes. To decontaminate by freezing, the project owner shall place equipment in a freezer 32°F or colder for a minimum of 8 hours. Repeat decontamination is required only if the equipment/clothing is removed from the site, used within a different watershed, and returned to the project site.

35. Decontamination of Vehicles and Equipment. If decontamination for aquatic invasive animal species is applicable, the project owner shall decontaminate vehicles and other project-related equipment too large to immerse in a hot water bath by pressure washing with hot water a minimum of 140°F at the point of contact or 155°F at the nozzle. Additionally, the project owner shall flush watercraft engines and all areas that could contain standing water (e.g. storage compartments) for a minimum of 10 minutes. Following the hot water wash, the project owner shall dry all vehicles, watercraft, and other large equipment as thoroughly as possible.

36. Decontamination Sites. If decontamination for aquatic invasive animal species is applicable, Project Owner shall perform decontamination of vehicles, watercraft, and other project gear and equipment in a designated location where runoff can be contained and not allowed to pass into CDFW jurisdictional areas and other sensitive habitat areas.

37. Notification of Invasive Species. The project owner shall notify the CPM and the CDFW immediately if an invasive species not previously known to occur within the project site is discovered during project activities by submitting a completed Suspect Invasive Species Report to the CPM and CDFW (available online at: http://www.dfg.ca.gov/invasives/inv_reporting/sightingReport.html) and photos to the Invasive Species Program by email at: invasives@wildlife.ca.gov. Notification may also be provided by calling (866) 440-9530. Upon receiving notification, the CPM (in consultation with the CDFW) will provide project owner with guidance for further action as appropriate to the species.

Mitigation

38. Acres of Mitigation. The project owner shall restore 0.216 acre of riparian habitat at a ratio of 1:1 for any riparian area that is disturbed.

39. Restoration of all Temporary Impacts Areas. All temporary habitat impact areas will be restored to native vegetation appropriate for the site. The native seed and/or propagules will be collected locally and/or be obtained from a local native plant nursery.

    The restoration sites shall be monitored for at least 5 years. More monitoring may be required if the restoration sites do not meet the success criteria.

40. Restoration/Mitigation Success Criteria. The success criteria for the habitats specified above shall be compared against an appropriate reference site with as good or better quality habitat. The success criteria shall include percent cover (both basil and vegetation), species diversity, abundance, and any other measures of success deemed appropriate by the CPM in consultation with CDFW.

Success criteria shall be separated into vegetative layers (tree, shrub, grass, and forb), and each layer shall be compared to the success criteria of the reference site to ensure one species or layer does not disproportionally dominate a site, but instead mimic the conditions of the reference site.

41. Local Sources. Plant material for revegetation shall be derived from cuttings, materials salvaged from disturbed areas, and/or seeds obtained from randomly selected native trees and shrubs occurring locally within the same drainage if possible. Otherwise plants shall be obtained from a native plant nursery.

42. Native Plant Nursery. Any replacement tree/shrub stock, if used, which cannot be grown from cuttings or seeds, shall be obtained from a native plant nursery, be ant-free, and shall not be inoculated to prevent heart rot. The project owner shall submit a list of all plant-related materials that must be obtained from offsite sources for CPM approval (in consultation with CDFW) prior to initiation of project activities.

43. Mitigation and Monitoring Reports. The project owner shall have a qualified restoration specialist monitor the recovery of plant, wildlife, and aquatic resources in the area following mitigation implementation. Monitoring of plant, wildlife, and aquatic resources shall be done in summer and winter of each year, through the term of restoration. This report shall include the status and any success trends for the success criteria. Photos from designated photo stations, depicting changes to the landscape over the course of restoration activities, shall be included.

44. Mitigation Security. The project owner shall provide financial assurances to the CPM and CDFW, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this Condition of Certification. These funds shall be used solely for implementation of the measures associated with the project in the event the project owner fails to comply with the requirements specified in this condition, or shall be returned to the project owner upon successful compliance with the requirements in this Condition. The CPM's or CDFW's use of the security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another acceptable form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval, in consultation with CDFW, of the form of the Security. Security shall be provided in the amount of $100,000 for the project.

This Security estimate reflects the amount that would be required for Security following the above mitigation requirements (#37-#42). The actual costs to comply with this condition will vary depending on the actual costs of acquiring, improving and monitoring the riparian revegetation.

Verification: Within 60 days prior to initiation of site assessment, pre-construction activities, site mobilization, and construction, the project owner shall submit to the CPM and CDFW the survey results.

Within 30 days prior to initiation of site assessment, pre-construction activities, site mobilization, and construction, the project owner shall submit a list to the CPM (in consultation with CDFW) of all plant-related materials that must be obtained from offsite sources.

No fewer than 30 days following the end of construction activities in and near jurisdictional waters of the State, the project owner shall implement the mitigation described above. The Mitigation and Monitoring Reports shall be provided to the CPM and CDFW within 90 days of completion of monitoring activities.

No fewer than 30 days prior to the start of work potentially affecting jurisdictional waters of the state, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above best management practices will be implemented and provide a discussion of work near jurisdictional waters of the state in Monthly Compliance Reports during construction and in Annual Compliance Reports during operation.

The project owner shall notify the CPM and CDFW, in writing, at least five days prior to initiation of project activities within jurisdictional waters of the State (riparian habitat) as noted and at least five days prior to completion of project activities in jurisdictional areas.

Restoration of any riparian habitat that is disturbed shall begin within 90 days after construction has ended within riparian habitat but may be up to 1 year, or as otherwise approved by the CPM, if seeds must be collected and grown in a nursery before planting.

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

BIO-9 Pre-construction nest surveys shall be conducted prior to construction work. The term “work” shall be defined as all site assessment, pre-construction activities, site mobilization, and ground disturbing construction activities.

Work activities on the gen-tie shall occur between September 16 through January 31 or in the case of nesting raptors September 16 through January 1 or on the process water supply line and natural gas pipeline within 500 feet of riparian habitat. (See Condition of Certification **BIO-7**)**.** The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat and substrate within 500 feet of the project site and linears.

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Site assessment and pre-construction surveys shall be conducted no more than 14 days prior to initiation of work. One survey needs to be conducted within the 3-day period preceding initiation of work.

   Additional follow-up surveys may be required if periods of construction inactivity exceed 2 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 surveys, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. The Designated biologist shall implement a default 300-foot minimum avoidance buffer for all passerine birds and 500-foot minimum avoidance buffer for all raptor species. The breeding habitat/nest site shall be fenced and/or flagged in all directions, and this area shall not be disturbed until the nest becomes inactive, the young have fledged and will no longer be impacted by the project. Nest locations shall be mapped using GPS technology. Offsite special-status nests shall be mapped and monitored, but shall not be fenced.

4. If active nests of special-status species are detected during the survey, the Designated Biologist or Biological Monitor shall inform the CPM within one business day, and shall monitor all onsite and offsite nests at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the Designated Biologist or Biological Monitor shall immediately implement adaptive measures to reduce disturbance in coordination with the CPM. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity, where possible.

5. If active nests are detected during the survey, the Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist or Biological Monitor, disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made.

6. A map shall be provided with nest locations with buffers, name of species, and date discovered. A table may also be provided to show this data per nest.

7. The Designated Biologist shall provide the CPM and CDFW with field notes or other documentation within 24 hours of completing the surveys. An email report with a letter report to follow may be used. The email/letter report should state how impacts of any nesting birds will be avoided by citing the appropriate information from these conditions.

Verification: The project owner shall provide notification to the CPM, CDFW, and FWS at least 2 weeks prior to initiating surveys; notification will include the name and resume of the biologist(s) conducting the surveys and the timing of the surveys. Prior to the start of any work, the project owner shall provide the CPM, CDFW, and FWS a letter-report describing the findings of the preconstruction nest surveys, including the time, date, methods, and duration of the surveys; identity and qualifications of the surveyor(s); and a list of species observed including a map and table. If active nests are detected during the surveys, the reports shall include an aerial photo identifying the location of the nest(s) and shall depict the boundaries of the proposed no disturbance buffer zone around the nest(s). This aerial photo with nest locations shall be updated weekly and provided to the CPM, CDFW, and FWS. 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.

BURROWING OWL AVOIDANCE AND MINIMIZATION MEASURES

BIO-10 The project owner shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:

1. Pre-Construction Surveys. The Designated Biologist (DB) or Biological Monitor (BM) shall conduct pre-construction surveys for burrowing owls within 14 days prior to initiation of any ground disturbing activities. The survey area shall include the Project Disturbance Area and surrounding 500-foot survey buffer for each phase of the project including site mobilization and construction. The survey shall be performed in accordance with the applicable sections of the March 7, 2012 (or subsequent applicable document), CDFW Staff Report on Burrowing Owl Mitigation.

The approved DB or BM shall be familiar with burrowing owl identification, behavior, and biology, and shall meet the minimum qualifications described in the 2012 CDFW Staff Report. If the survey does not identify any nesting burrowing owls on the site, further mitigation is not required for that phase unless activity ceases for a period in excess of 14 days in which case the survey requirements and obligations shall be repeated.

2. Implement Avoidance Measures If an active burrowing owl burrow is detected within the survey area in an area where disturbance would occur, the project owner shall implement measures at least equal to the 2012 (or subsequent applicable) CDFW Staff Report, as determined by the DB, in consultation with the CPM and CDFW.

    a. Establish Non-Disturbance Buffer.

        i. Non-disturbance buffers shall be based on the recommended restricted activity dates and setback distances by level of disturbance for burrowing owls in the 2012 (or subsequent applicable) CDFW Staff Report.

        ii. During the breeding season (February 1 through August 31), the following measures shall be implemented: Disturbance free buffers will be established around the active burrow; during the peak of the breeding season, between April 1 and August 15, a minimum of a 200 meter buffer will be maintained; And between August 16 and March 31, a minimum of a 200 meter buffer will be maintained. The qualified biologist (as defined above) will determine, in consultation with the CPM and CDFW, if the buffer should be increased or decreased based on site conditions, breeding status, and non-project-related disturbance at the time of construction.

    b. Monitoring. Monitoring of the active burrow will be conducted by the approved DB or BM during construction on a weekly basis to verify that no disturbance is occurring.

    c. Determine Need for Passive Exclusion. If burrowing owls are found outside the project site during preconstruction surveys, the DB or BM shall evaluate the potential for disturbance. Passive exclusion (through use of a trap door on a burrow) of burrowing owls shall be avoided to the maximum extent feasible where no ground disturbance will occur. In cases where ground disturbance occurs within the no-disturbance buffer of an occupied burrow, the DB or BM shall determine in consultation with the CPM and CDFW whether reduced buffers, additional monitoring, or passive exclusion is appropriate.

3. Implement a Burrowing Owl Exclusion Plan During the non-breeding season (September 1 to January 31), owls occupying burrows that cannot be avoided will be passively excluded consistent with Appendix E of the 2012 CDFW Staff Report. The project owner shall develop a Burrowing Owl Exclusion Plan and submit to the CPM for approval in consultation with CDFW. The project owner shall implement measures described in the final Burrowing Owl Exclusion Plan which shall include, at a minimum, the following:

    a. Iidentify suitable sites within 50-100 meters of project disturbance areas for creation or enhancement of burrows prior to passive relocation efforts;

    b. Provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl; design of the artificial burrows shall be consistent with CDFW guidelines (CDFW 2012);

    c. Provide detailed methods and guidance for passive relocation of burrowing owls occurring within the project disturbance area; and

    d. Describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where burrowing owl were relocated from and provide a reporting plan.

4. Compensatory Mitigation If active burrowing owl dens are present and the project would impact active dens, the project owner shall implement the following:

    a. If active owl burrows are present and the project would impact active burrows, the project owner shall provide compensatory mitigation for the permanent loss of burrowing owl habitat at least equal to the 2012 (or subsequent applicable), CDFW Staff Report.

    b. Such mitigation shall include the permanent protection of land which is deemed to be suitable burrowing owl habitat through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, or the purchase of burrowing owl conservation bank credits from a CDFW-approved burrowing owl conservation bank.

    c. In determining the location and amount of acreage required for permanent protection, the project owner, in conjunction with the CPM in consultation with CDFW, shall seek lands that include the same types of vegetation communities and fossorial mammal populations found in the lost foraging habitat, with a preference given to lands that are adjacent to, or reasonably proximate to, the lost foraging lands. Such lands shall provide for nesting, foraging, and dispersal comparable to, or better than, the lost foraging land.

d. The minimum amount of acreage for preservation shall be 6.5 acres per nesting pair or unpaired resident bird. Additional lands may be required as determined pursuant to the then current standards/best practices for mitigation acreage as determined by the CPM in consultation with CDFW.

Verification: If pre-construction surveys detect burrowing owls within 500 feet of proposed construction activities, at least 10 days prior to the start of any project-related site disturbance activities, the DB shall provide to the CPM and CDFW documentation indicating that non-disturbance buffer fencing has been installed as described above. The project owner shall report monthly to the CPM and for the duration of construction on the implementation of burrowing owl avoidance and minimization measures.

If a Burrowing Owl Exclusion Plan is required for the project, the project owner shall provide a draft Burrowing Owl Exclusion Plan to the CPM and CDFW no fewer than 90 days prior to the proposed exclusion date during the non-breeding season (September 1 to January 31). The final Burrowing Owl Exclusion Plan shall be provided by the project owner no fewer than 30 days prior to the proposed exclusion date during the non-breeding season (September 1 to January 31).

Within 30 days after completion of construction the project owner shall provide to the CDFW and CPM a written report identifying how mitigation measures described in the plan have been completed.

No less than 30 days prior to the start of site mobilization and construction activities the project owner shall provide the CPM with an approved form of Security in accordance with this condition of certification. Actual security for acquisition of burrowing owl habitat shall be provided no later than 7 days prior to the beginning of site mobilization and construction activities.

No fewer than 90 days prior to the land or easement purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFW for the compensation lands and associated funds.

No later than 18 months from initiation of construction, the project owner shall provide written verification to the CPM that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.

LEAST BELL'S VIREO MITIGATION

BIO-11 To fully mitigate for impacts to least Bell's vireo the project owner shall conduct protocol surveys for least Bell's vireo prior to construction at the project site. The report shall include a map of the breeding territories and location of nest(s) if present.

1. If nesting pairs of least Bell's vireo are found the following shall be done:

    a. The Designated Biologist or Biological Monitor shall monitor daily all nesting pairs during construction and provide daily monitoring reports,

    b. Implement noise reduction measures which reduce noise and visually block construction work from the active nest(s) and provide documentation of noise reduction measures implemented, location(s), and the how much they reduce noise and visual activities,

    c. If an active nest (i.e. eggs or young) is abandoned by the parent during construction "take" would be authorized for the impact. Mitigation for this impact would require the project owner to provide funds to an organization that is enhancing and/or restoring least Bell's vireo habitat.

        i) The project owner shall provide compensatory mitigation based on the territory size (in acres) of each breeding pair (as determined from protocol surveys) with nest failure of an active nest (i.e. young or eggs).

        ii) Restoration of habitat may constitute the removal of invasive, exotic, or non-native plant species such as giant reed (Arundo) which degrades habitat. The current price for the restoration of habitat in Ventura County is $150,000 per acre. This includes dense giant reed (*Arundo*) removal, follow-up treatment and active site restoration over a 5 year period and includes annual reporting, biological monitoring, temporary irrigation, and planting.

            (1) Be as close to the area of impact as possible;

            (2) The funding priority shall be for enhancement and/or restoration of least Bell's vireo known breeding habitat or potential breeding habitat;

            (3) Funding may be provided for brown headed cowbird trapping if funding for enhancement and/or restoration is not possible. Trapping must occur on land that is known breeding habitat or potential breeding habitat for least Bell's vireo.

    d. The project owner shall submit a proposal that includes a description of the funding amount, the organization or entity who would receive the funds, description detailing the enhancement and/or restoration of habitat, and a map with the restoration area clearly marked.

2. If no nesting pairs of least Bell's vireo are found then nothing needs to be done for that current breeding season.

3. Protocol surveys shall be conducted the following year as the construction period is 23 months long.

4. If a least Bell's vireo nesting pair begins nesting after construction has commenced the following year no monitoring is required of these nests.

5. Mitigation Security. The project owner shall provide financial assurances to the CPM with copies of the document(s) to CDFW and FWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this condition.

   These funds shall be used solely for implementation of the measures associated with the project in the event the project owner fails to comply with the requirements specified in this condition, or shall be returned to the project owner upon successful compliance with the requirements in this condition. The CPM's use of the security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the Energy Commission in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval, in consultation with CDFW, and the FWS, of the form of the Security. Security shall be provided in the amount of $1.125 Million for the project, the approximate cost of restoring habitat in Ventura County. This Security estimate reflects the amount that would be required for Security as stated in 1.c.i. above to enhance suitable least

   Bell's vireo habitat at $150,000 per acre for 5 years. The actual costs to comply with this condition will vary depending on the actual costs of enhancement.

Verification: The project owner shall provide the CPM with an approved form of Security in accordance with this condition of certification no later than 30 days prior to beginning construction. An executed Security instrument shall be provided no later than 7 days prior to the beginning of construction (i.e. ground-disturbing activities including site assessment, pre-construction activities, site mobilization, and ground disturbing construction activities).

The project owner shall complete and provide written verification to the CPM, CDFW, and FWS of any required funds provided for the enhancement and/or restoration of least Bell's vireo habitat within 18 months of the start of project construction.

No later than 60 days after least Bell's vireo protocol surveys are completed and no later than 30 day prior to the beginning of construction, the project owner shall provide the results of the least Bell's vireo protocol surveys with a map showing any active territories and nests.

If breeding pairs are detected the project owner shall provide copies of the daily monitoring reports within 5 days of completing a day of monitoring. These reports may be as simple as providing an email (per 1.a. above).

If breeding pairs are detected and no later than 45 days after the noise measures are in place, the project owner shall provide documentation (per 1.b. above).

No fewer than 90 days prior to providing any required funds to an organization or entity, the project owner shall submit a proposal to the CPM.

SOUTHWESTERN WILLOW FLYCATCHER AND WILLOW FLYCATCHER MITIGATION

BIO-12 To fully mitigate for impact to southwestern willow flycatcher and willow flycatcher from collisions with the transmission line the project owner shall provide funds for the enhancement and/or restoration of 50 acres of suitable habitat for these species. This condition authorizes "take" of southwestern willow flycatcher and willow flycatcher from collisions with the transmission line.

1. Restoration of habitat may constitute the removal of invasive, exotic, or non-native plant species such as giant reed (*Arundo*) which degrades habitat. The current price for the restoration of habitat in Ventura County is approximately $150,000 per acre. This includes dense *Arundo* removal, follow-up treatment, and active site restoration over a 5 year period and includes annual reporting, biological monitoring, temporary irrigation, and planting.

    a. Be as close to the area of impact as possible;

    b. The funding shall be for enhancement and/or restoration of southwestern willow flycatcher and willow flycatcher habitat suitable and potential breeding habitat that would be enhanced and/or restored to support breeding pairs.

2. The project owner shall submit a proposal that includes a description of the funding amount, the organization or entity who would receive the funds, descriptions detailing the enhancement and/or restoration of habitat, and a map with the enhancement and/or restoration area clearly marked.

3. Mitigation Security. The project owner shall provide financial assurances to the CPM with copies of the document(s) to CDFW and FWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this condition.

These funds shall be used solely for implementation of the measures associated with the project in the event the project owner fails to comply with the requirements specified in this condition, or shall be returned to the project owner upon successful compliance with the requirements in this condition. The CPM's use of the security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the Energy Commission in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval, in consultation with CDFW, and the FWS, of the form of the Security. Security shall be provided in the amount of $7.5 Million for the project.

This Security estimate reflects the amount that would be required for Security to enhance 50 acres of suitable southwestern willow flycatcher and willow flycatcher habitat at $150,000 per acre. The actual costs to comply with this condition will vary depending on the actual costs of enhancement.

Verification: If the mitigation actions required under this condition are not completed prior to the start of construction (i.e. ground-disturbing activities including site assessment, pre-construction activities, site mobilization, and ground disturbing construction activities), the project owner shall provide the CPM with an approved form of Security in accordance with this condition of certification no later than 30 days prior to beginning of construction. Actual Security shall be provided no later than 7 days prior to the beginning of construction. If Security is provided, the project owner shall complete and provide written verification to the CPM, CDFW, and FWS of the funds provided for the enhancement and/or restoration of southwestern willow flycatcher and willow flycatcher habitat within 18 months of the start of project construction.

No fewer than 90 days prior to providing funds to an organization or entity, the project owner shall submit a proposal to the CPM. The proposal shall include specific details of the subject organization, its status as a public or private entity, and details on the restoration and enhancement activities to be performed.

COMPLIANCE WITH THE ENDANGERED SPECIES ACT FOR IMPACTS TO LEAST BELL'S VIREO, WESTERN YELLOW-BILLED CUCKOO, AND SOUTHWESTERN WILLOW FLYCATCHER

BIO-13 The project owner shall provide evidence of a take exemption from the U.S. Fish and Wildlife Service (FWS) to comply with the Endangered Species Act for the take of federal listed species which are also state listed. These species include least Bell's vireo (endangered – state and federal list), western yellow-billed cuckoo (threatened – federal list, endangered – state list) and southwestern willow flycatcher (endangered – state and federal list).

The project owner shall provide the CPM with a copy of the take exemption from the FWS and include it in the BRMIMP.

Any mitigation measures provided in the take exemption shall be included into the BRMIMP and followed.

Verification: Within 48 hours of receiving the take exemption, a copy shall be provided to the CPM. A revised BRMIMP shall be provided within 30 day after the take exemption is signed by the FWS.

TREE PROTECTION GUIDELINES AND MITIGATION

BIO-14 The Ventura County Zoning Ordinance (Tree Protection Regulations Article 7, Section 8107-25 - Table I Protected Trees) and Tree Protection Guidelines provide for protection of certain species of trees, defined as “Protected Trees”. A protected tree is defined as any tree from among the species or any heritage or historical tree listed in Table I with one or more differentiated trunks which meets the dimensional standards therein and which is situated on land with the applicable zoning shown on Table I. For the purposes of mitigating impacts to biological resources, only native trees would be mitigated. Native is defined as any trees indigenous to Ventura County not planted for commercial agriculture. Therefore, only portions of the guidelines which are applicable to mitigating arboreal biological resources are provided here. The removal or trimming of any native tree would be mitigated as follows:

1. Compensation for removal of native trees shall be provided through the “offset” replacement of trees on an equal basis, as determined by cross-sectional area of the tree(s) to be removed, when measured at 4.5 feet above the ground. Offset guidelines are outlined in Section IV of the county Tree Protection Guidelines. This basis is defined as the aggregate areas of the cross sections of the replacement trees must be equal to or greater than the cross sectional areas of the altered elements of a tree (e.g., trunks, limbs, or roots) (see Tree Protection Guidelines for further details).

2. Any trimming or alteration of native trees shall occur according to International Society of Arboriculture standards.

3. Tree tagging and fencing shall be used to protect the trees that are not removed or trimmed.

4. Provide protection of other protected native trees on the site during the construction period.

5. Provide plans and field identification markers to ensure that only the approved tree alterations occur.

6. Provide a contract for services with a qualified tree consultant who shall be approved by the CPM.

7. Supervision/oversight shall be by an approved certified arborist who shall be approved by the CPM.

8. Include a Maintenance and Care Program to ensure the continued health and care of protected trees and those planted as replacements.

9. The following are optional ways of achieving the ordinance required amount of “replacement” trees. The use of one or a combination of options is permitted in accordance with Section 8107-25.10.1of the county tree protection ordinance:

    a. Transplanting of trees on or off site. This can include transplanting to a nursery for holding purposes. (Under the ordinance this transplantation technically is not considered a loss that requires replacement);

    b. Planting new trees on or off site;

    c. Dedication of land in fee or through appropriate easements which is suitable for the planting and survival of protected trees;

    d. Dedication of land in fee or through appropriate easements which contains protected trees or significant habitat suitable for preservation;

    e. Financial contributions to appropriate agencies/entities which further the above options as well as the following objectives:

        i. The general preservation, regeneration and maintenance of protected trees and significant habitat;

        ii. Educational and informational programs related to the value of protected trees and significant habitat.

10. The “offset” options described above are to be implemented in accordance with the following guidelines:

    a. Replacement tree must occur on or offsite (but in appropriate habitat for the species to be replaced) as close to the site of impact as possible where the loss of protected tree(s) that are native have occurred and be within Ventura County;

    b. The species serving as “replacement/offset” need not always be the same as the species that was removed;

    c. Financial contributions are to be based on the purchase price of the replacement tree stock of the same species as the removed tree(s);

    d. Adequate provisions are to be made for the maintenance of new plantings to ensure their survival.

11. Mitigation Security. The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement the mitigation measures described in this Condition. These funds shall be used solely for implementation of the measures associated with the project in the event the project owner fails to comply with the requirements specified in this Condition, or shall be returned to the project owner upon successful compliance with the requirements in this Condition. The CPM's use of the security to implement measures in this Condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit or other form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval of the form of the Security. Security shall be provided in an amount sufficient to pay for the expense of mitigating impacts to protected trees on the project, whether through compensation, transplanting, acquisition and endowment of suitable replacement habitat, or other means as approved by the CPM. The Security shall also include sufficient funds to pay for the expenses required to monitor replacement or

    transplanted trees for at least 5 years. More years of monitoring may be required depending of the success of the transplanted trees. The project owner shall submit a detailed estimate of the costs necessary to comply with this condition, subject to review and approval by the CPM.

Verification: The project owner shall provide plans (#5 above) to the CPM at least 30 days prior to tree removal or trimming.

At least 60 days prior to tree removal or trimming the project owner shall provide the resume of a certified arborist and the resume of a qualified tree consultant for approval by the CPM.

At least 45 days prior to tree removal or trimming the project owner shall provide a draft of the Maintenance and Care Program (#8 above) for review and approval by the CPM.

A final copy of the Maintenance and Care Program shall be provided by the project owner at least 10 days prior to tree removal or trimming to the CPM.

At least 90 days prior to tree removal or trimming the project owner shall provide a cost estimate as described in #11 to the CPM for approval. The Security shall be provided to the CPM within 10 days of the approved cost estimate. The Security shall be provided at least 30 days prior to tree removal or trimming.

Appendix 1
Estimated Willow Flycatcher (Southwestern Willow and Willow Flycatcher) Deaths for Mission Rock Energy Project

6.6 miles of transmission line – Mission Rock (project)

WFD = southwestern willow flycatcher and willow flycatcher deaths
Willow flycatcher = southwestern willow flycatcher and willow flycatcher
NPBD = nocturnal passerine bird deaths

16.4 birds/km (or .621 mi) from Desert Sunlight gen-tie

Calculations

$\frac{16.4\ birds}{.621\ mi}$ × 6.6 mi … ≈ 174.30 DNPB (total dead nocturnal passerine birds)

.0031… × 174.30 = 0.54 willow flycatcher deaths out of the total DNPB

$\frac{0.54...WFD}{mi} = \frac{x\ WFD}{6.6mi}$ → x = 0.356… WFD annually for the project

0.356… × 30 years = 10 WFD for the life of the project

10 *WFD* × $\frac{5ac}{1\ WFD}$ = 50 acres needed to mitigate for the southwester willow flycatcher and willow flycatcher deaths

This approach assumes a constant ratio along the entire length of the transmission line and that Desert Sunlight and the proposed project are equivalent. To be more predictive of what may occur at other gen-tie lines, information from the Desert Sunlight was used. The number of dead willow flycatchers was compared to the number of nocturnal passerine migrants that died at Sunrise Power Link. The percentage of the total number of dead nocturnal passerine migrants was 0.31 percent. Taking the estimated number of passerine nocturnal migrants found at Desert Sunlight (315) and the length of the gen-tie 19.2 km, 16.4 birds per km could be applied to the length of other gen-tie lines to determine the total number of nocturnal passerine fatalities. The proposed project over its 30 year life would have 0.356 willow flycatcher death each year for a total of 10 willow flycatcher deaths from the collision with the 6.6 mile transmission line over 30 years (life of the project). The Bureau of Land Management established in the DRECP for every willow flycatcher death 5 acres of land would be restored for the species. The 5 acres would be evaluated every five years based on the results from monitoring studies.

WILDLIFE OBSERVATION FORM

To Record Animals Found In INSERT PROJECT TITLE

To be filled out by personnel who find active nest sites and burrows, dens, and dead or injured wildlife, or other biological resources during daily construction activities.

Name:
Date:
Location of Observation:
Wildlife Species: Condition of Wildlife: alive or dead (circles one)
Possible cause of injury or death:
Where is the animal currently?
Is the resources in danger of project (or other) impacts?
Comments:
Please contact the Designated Biologist or Biological Monitor for questions and to report any wildlife, nest or den in the project area that could be disturbed. The Designated Biologist will advise personnel on measures required by California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service to protect fish, wildlife and plants from construction impacts. Appropriate state and federal permits may be required before handling plant and wildlife species.
DESIGNATED BIOLOGIST: BIOLOGICAL MONITOR:

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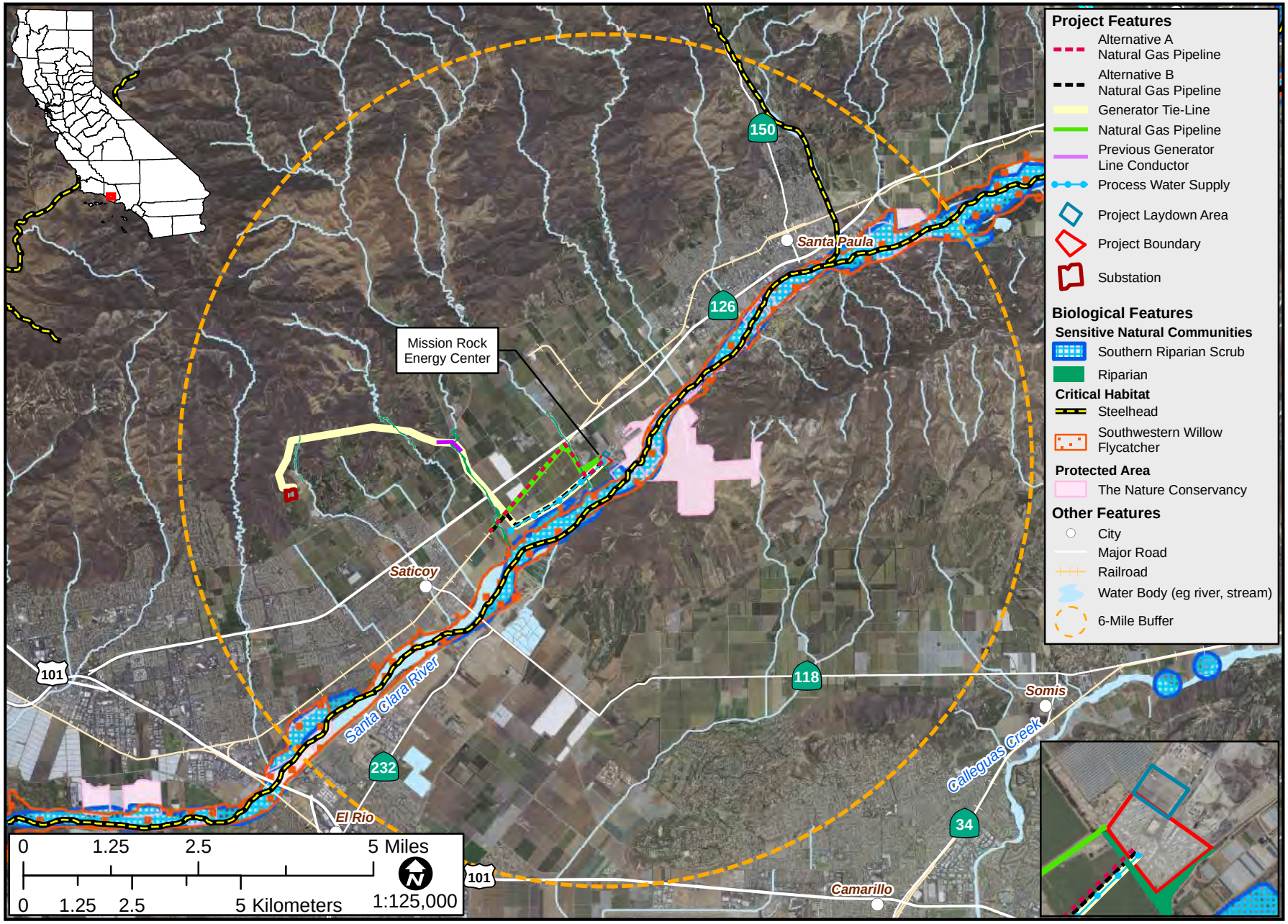
BIOLOGICAL RESOURCES - FIGURE 1

Mission Rock Energy Center - Protected and Special Status Areas



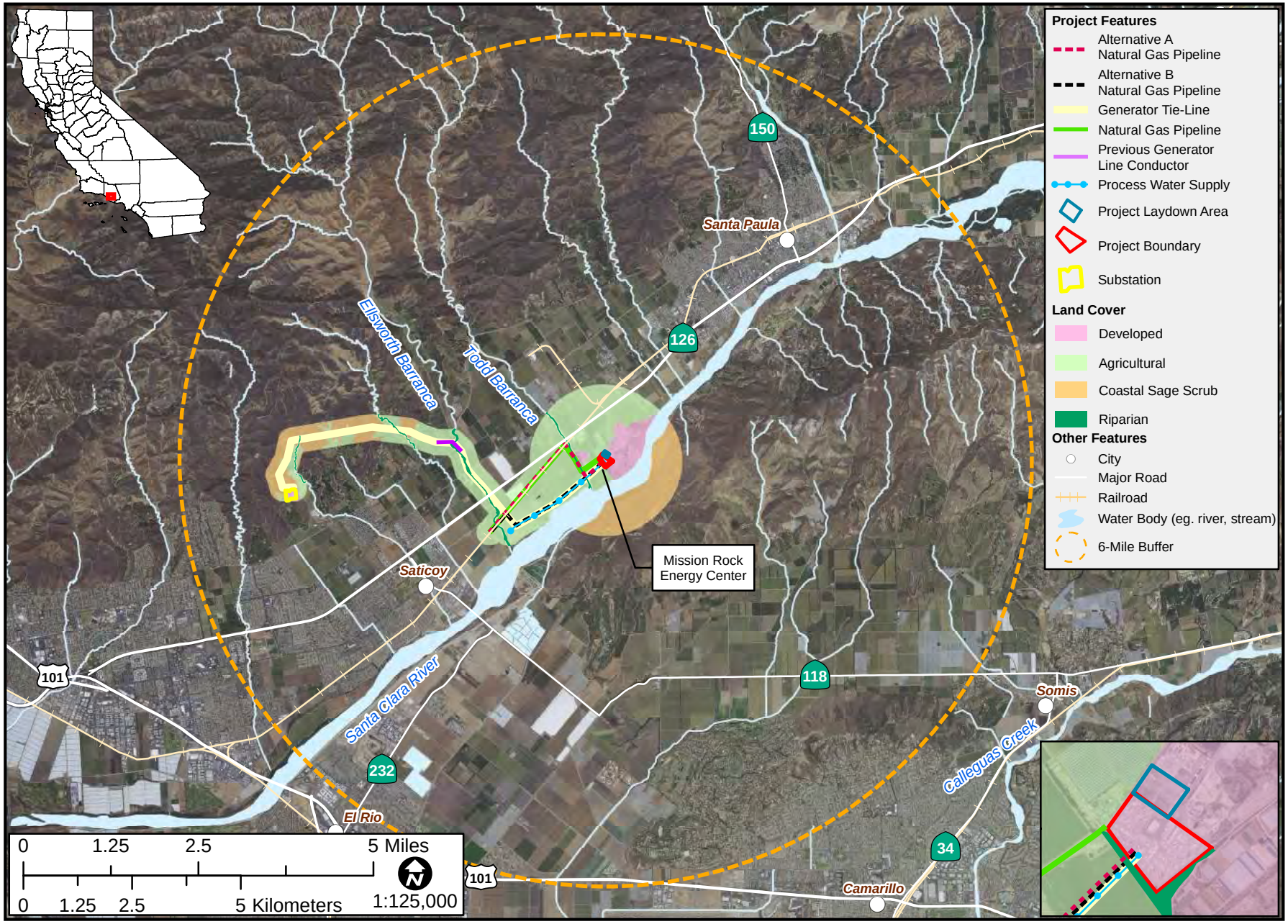
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: United States Fish and Wildlife Service ~ 2015, Critigen 2016, CH2MHill 2016, ESRI, USGS, OpenStreetMap 2016, NAIP 2016 and California Energy Commission

BIOLOGICAL RESOURCES - FIGURE 2

Mission Rock Energy Center - Land Cover Types/ Vegetation



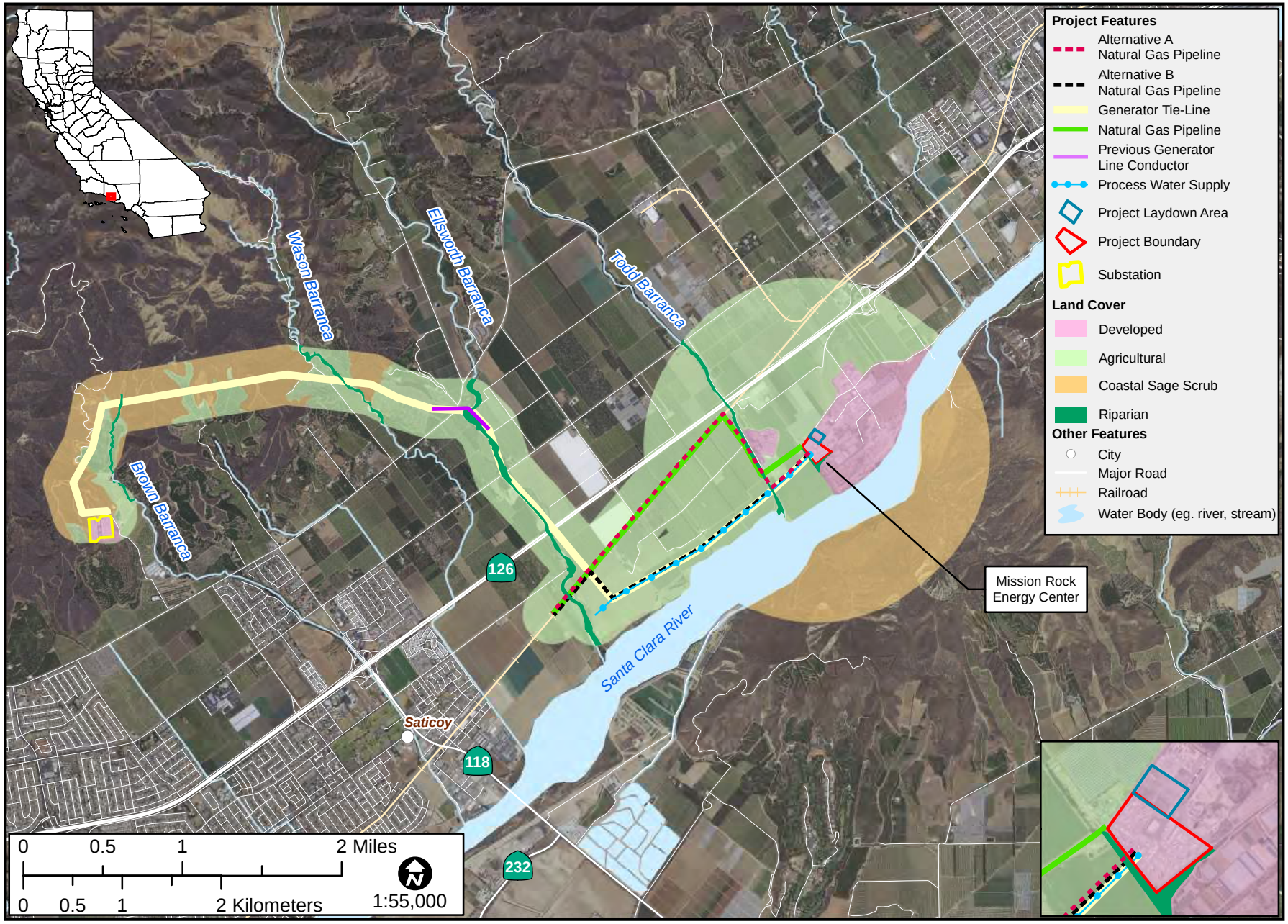
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Department of Fish and Wildlife - California Natural Diversity Database May 2016, Critigen 2016, CH2MHill 2016, ESRI, USGS, OpenStreetMap 2016, NAIP 2016 and California Energy Commission

BIOLOGICAL RESOURCES - FIGURE 3

Mission Rock Energy Center - Water of the State/ Riparian



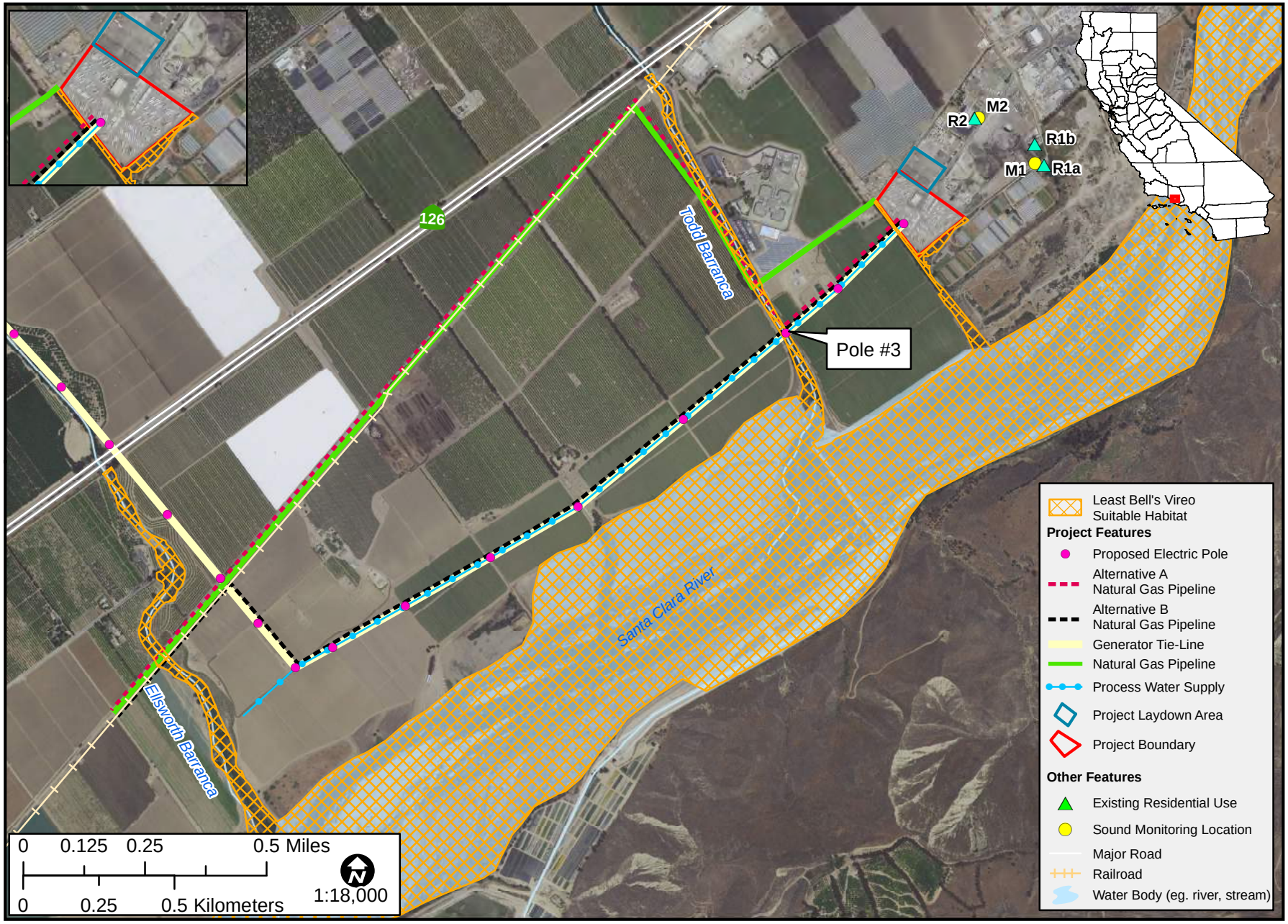
BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Department of Fish and Wildlife - California Natural Diversity Database May 2016, Critigen 2016, CH2MHill 2016, ESRI, USGS, OpenStreetMap 2016, NAIP 2016 and California Energy Commission

BIOLOGICAL RESOURCES - FIGURE 4

Mission Rock Energy Center - Least Bell's Vireo Suitable Habitat



BIOLOGICAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Department of Fish and Wildlife - California Natural Diversity Database May 2016, Critigen 2016, CH2MHill 2016, ESRI, USGS, OpenStreetMap 2016, NAIP 2016 and California Energy Commission

Biological Resources - FIGURE 5

Mission Rock Energy Center - Least Bell's Vireo Suitable Habitat: Photo 1

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission

Biological Resources - FIGURE 6

Mission Rock Energy Center - Least Bell's Vireo Suitable Habitat: Photo 2

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission

Biological Resources - FIGURE 7

Mission Rock Energy Center - Least Bell's Vireo Suitable Habitat: Photo 3

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission

Biological Resources - FIGURE 8

Mission Rock Energy Center - Least Bell's Vireo Suitable Habitat: Photo 4

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission

Biological Resources - FIGURE 9

Mission Rock Energy Center - Least Bell's Vireo Suitable Habitat: Photo 5

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission

CULTURAL RESOURCES

Sean de Courcy and Matthew Braun[1]

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Mission Rock Energy Center (Mission Rock or project) could result in significant, direct impacts to buried archaeological resources that may qualify as historical or unique archaeological resources under the California Environmental Quality Act. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** and **CUL-15** would ensure that the applicant would be able to respond quickly and effectively in the event that archaeological resources are found buried beneath the project site and associated linear features during construction-related ground disturbance.

Staff's analysis of Mission Rock with regard to ethnographic resources is inconclusive at this time. Staff is aware of two potential ethnographic resources, a traditional collecting area and a traditional cultural landscape, near the proposed project area and is continuing to consult with California Native American tribes who have knowledge of the area. Staff anticipates that these resources will be fully identified and analyzed in the Final Staff Assessment (FSA).

Staff's concludes that the proposed project would result in significant, direct and cumulative impacts to approximately 225 built environment resources associated with the Santa Clara Valley Rural Historic District. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-15** would reduce the project's impact to the District to a less than significant level.

Staff has considered environmental justice populations in its analysis of Mission Rock. Because staff has not made a conclusive identification and analysis of the potential ethnographic resources, staff cannot conclude at this time if Native Americans would be considered an environmental justice population that could be impacted by the proposed project. Staff is continuing to consult with California Native American tribes with knowledge of the area.

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the proposed project on cultural resources. Three broad classes of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic. Those cultural resources determined eligible to the California Register of Historical Resources (CRHR) are called historical resources and are further defined under state law as buildings, sites, structures, objects, areas, places, records, manuscripts, and tribal cultural resources (Cal. Code Regs., tit. 14, §§ 4852a, 5064.5(a)(3); Pub. Resources Code, §§ 5020.1(h, j), 5024.1[e][2, 4], 21074).

[1] De Courcy – Historic built environment resources; Braun – Prehistoric and ethnographic resources.

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

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

Tribal cultural resources are a category of resources recently introduced into the California Environmental Quality Act (CEQA) by Assembly Bill 52. Tribal cultural resource are resources that are any of the following: sites, features, places, cultural landscapes, sacred places, or objects that are included in or determined eligible to the CRHR, or are included on a local register of historic resources as defined in Subdivision K of section 5020.1 of the Public Resources Code. Tribal cultural resources can be prehistoric, ethnographic or historic.

Historic-period resources are those materials, archaeological and architectural, usually but not necessarily associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, trail and road corridors, artifacts, or other evidence of historic human activity. Under federal and state requirements, historical cultural resources must be greater than 50 years old to be considered of potential historic importance. A resource less than 50 years of age may be historically important if the resource is of exceptional importance. The Office of Historic Preservation (OHP 1995:2) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

For Mission Rock, staff provides an overview of the environmental setting and history of the project area, an inventory of the cultural resources identified in the project vicinity, an analysis of those cultural resources that staff recommends for eligibility to the CRHR and that therefore qualify as historical resources, and an analysis of the potential impacts on historical resources from the proposed project using criteria from CEQA. The primary analysis objective is to ensure that all potential impacts are identified and that conditions of certification are set forth that ensure that impacts, to the extent possible, are mitigated below levels of significance.

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

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Projects requiring Energy Commission certification are reviewed to ensure that the proposed facilities would comply with all applicable laws, ordinances, regulations, and standards (LORS) (Pub. Resources Code, §25525; Cal. Code Regs., tit. 20, 1744[b]).

See **Cultural Resources Table 1** for a summary of cultural resources LORS applicable to the project.

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

Applicable LORS	Description
State	
Public Resources Code, §§5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until s/he confers with the Native American Heritage Commission (NAHC)-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
Public Resources Code, §5097.99	§5097.99 prohibits the acquisition, possession, sale, or dissection with malice or wantonness of Native American remains or artifacts taken from a Native American grave or cairn.
Health and Safety Code, §7050.5	This code prohibits the disturbance or removal of human remains found outside a cemetery. It also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Civil Code, §1798.24	Provides for non-disclosure of confidential information that may otherwise lead to harm of the human subject divulging confidential information.
Government Code, §6250.10—California Public Records Act	Provides for non-disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the NAHC, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.
PRC, Division 20. California Coastal Act. Chapter 3, Article 5, Section 30244	Requires reasonable mitigation for projects that would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer (SHPO).
Local	
County of Ventura General Plan September 22, 2015	Section 1.8: Paleontological and Cultural Resources. Establishes goals and policies for managing cultural resources within the county's jurisdiction.
County of Ventura Cultural Heritage Ordinance December 12, 2000	Sets procedures and policies for preserving and protecting public and private historic, cultural and natural resources that are of special historical or aesthetic character or interest to the people of Ventura County.
County of Ventura Tree Protection Ordinance February 25, 1992	Defines categories of protected trees as established by the County of Ventura. Includes discretionary permitting process for alteration, removal, or transplantation of protected trees.

Applicable LORS	Description
City of Santa Paula General Plan	Goals 6.1 The amenities needed to enrich the quality of life, including cultural and historic places, should be protected and preserved. 6.2 The historic, cultural and archaeological resources of the community should be preserved for future generations. Objectives 6(a) The City should encourage Historic Preservation as a valuable tool to retain the City's heritage. 6(b) Designating historic districts such as the downtown should be encouraged. Policies 6.a.a. Activities and development that could damage or destroy archaeological, historic or architectural resources are to be avoided. (IM 30-34) 6.b.b. Historic, cultural and archeological resources should be evaluated in the CEQA process and full mitigation provided. (IM 30-34)

SETTING

Information regarding the setting of the proposed project places the project in regional geographical and geological contexts. Additionally, the archaeological, ethnographic, and historic backgrounds provide the contexts for the evaluation of the historic significance of any identified cultural resources within the project area of analysis (PAA).

REGIONAL SETTING

The proposed project would be located in central Ventura County, near the city of Santa Paula and the town of Saticoy, California. As discussed in the Application for Certification (AFC), the proposed project site is located in the western half of the Santa Clara River Valley in the Ventura Basin (CAL 2015a: 5.3-2). The Santa Clara River is about 0.3 miles south of the proposed project site. The project site is situated within the Transverse Range geomorphic province. Major faults in the area include the west to southwest trending Oak Ridge and Pintas-Point-Ventura Faults (CAL 2015a: 5.4-1).

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed project site is located in an industrial park in unincorporated Ventura County. The project site is currently used as a storage lot for RVs and is bordered on the north, south, and west by agricultural structures and fields, and to the east by an asphalt recycling plant (CAL 2015a 5.6-1).

Environmental Setting

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time, are central to understanding whether and how an area was used during prehistoric and historic times. During the times that humans have lived in California, the region in which the proposed project is located has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the project vicinity. Consequently, it is important to consider the

historic character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology. An overview of the paleoenvironment is provided here for the reader, with a more detailed discussion in **Cultural Resources Appendix CR-1**.

Overview of Environmental Characteristics of the Proposed Project Area

The proposed project site would be situated at an elevation of 181-186 feet above mean sea level, and the site and proposed gas generator tie lines and water lines would extend across relatively flat terrain adjacent to the Santa Clara River, while the proposed generator tie-line and towers would also traverse the southern slopes of the Sulphur Mountains.

The modern climate of the project vicinity is influenced by the nearby coastline (~10 miles west). Consequently, the local weather conditions are typically mild, with warm summers and cool winters. Precipitation is concentrated during the winter months, with mean annual precipitation of about 12 to 18 inches (McGinley 2009).

The Santa Paula geologic quadrangle is characterized by folded and faulted Pliocene to Quaternary sedimentary rocks. The Santa Clara River Valley, in which the proposed project is situated, is the surface expression of a deep synclinal trough into which Plio-Pleistocene sediments were deposited, contemporaneous with the folding of Pliocene and Quaternary sedimentary rocks (CAL 2015a: 5.4-1).

The proposed site of electric generation and the laydown area would be located on geologic deposits classified as Qht, Stream Terrace Deposits. The proposed natural gas and water pipeline corridors would be located in Qht, Qhf, Alluvial Fan Deposits (Holocene), and Qhfy, Alluvial Fan Deposits (latest Holocene). The proposed generator tie-line would be located in Qht, Qhf, Qhfy, Qa, Alluvial and colluvial deposits association with Qw (Active Wash deposits), and Pleistocene formations in the foothills, Qs, Saugus formation, Qlp, Las Posas formation, and Qsb, Santa Barbara formation. Geomorphologically, this information indicates most of these deposits formed contemporaneously with human occupation in the region, i.e., during the Holocene, which suggests a high potential for intact, buried archaeological resources.

The geomorphology of the area is explained in more detail in **Cultural Resources Appendix CR-1**.

The natural habitats most closely associated with the project area, and those plants and animals available to prehistoric Native Americans that were sought for food and other material cultural needs, are detailed more fully in **Cultural Resources Appendix CR-1**.

Prehistoric Setting

The regional archaeological prehistory for the Santa Paula region presented by the applicant in the AFC is based on Jones et al. (2007) but is not as relevant to the proposed project area as other chronologies. Wallace (1955) and Warren (1968), and supplemented by Glassow et al. (2007:191-213) are the chronologies most applicable to the project area. This sequence identifies four periods/horizons, Horizon I –

Early Man/San Dieguito Tradition (ca. 12,000-8,000 B.P.); Horizon II – Millingstone Period/Encinitas (8,000-5,000 B.P.); Horizon III – Intermediate/Campbell Tradition (5,000- 1,500 B.P.); Horizon IV – Late Prehistoric (ca. 1,500 B.P. - Historic Contact). The periods are primarily separated on the basis of differences in material culture through time, e.g., projectile point technologies, use or non-use of various food-processing materials, burial practices, or ceramics. The various traditions/complexes identified within these periods are discussed in more detail in **Cultural Resources Appendix CR-1**.

Ethnographic Setting

The proposed project is located in the inland portion of Chumash mainland territory. There are several maps of Chumash village locations (King 1971:30, King 1975:175, Kroeber 1976: Plate 48; Northwest Economic Associates et al. 2014: Figure 44, 219), some of which are in relatively close proximity to the proposed Mission Rock project. **Cultural Resources Figure 1** is a map that displays the approximate locations of known Chumash settlements in the Santa Clara River Valley and surrounding areas. This map is a conglomeration of four different interpretations of village locations and the reader should note that while the locations are not exact and the spellings vary, there were many significant Chumash settlements in the region in both the prehistoric and historic periods. This figure shows multiple locations for some of the same village sites; a result of imperfections in the source maps that manifest themselves when rectified in a geographic information system layer.

The village of *Sa'aqtik'oy* was the closest known ethnographic village to the project, about 1.5 miles west of the proposed generator tie-line. *Sa'aqtik'oy* had several significant occupations from the Millingstone Period into the historic period, and was initially recorded as four archaeological sites, CA-VEN-31, CA-VEN-32, CA-VEN-33, and CA-VEN-34 (Lopez 1995). The village was located close to freshwater springs and, before the area was developed, was surrounded on three sides by large embankments for which the village was named (*Sa'aqtik'oy* means "sheltered from the wind" in Chumash). Today, the archaeological components of the village have been destroyed, removed, built on, or covered with fill.

The mission records from San Buenaventura do not list *Sa'aqtik'oy* as a village of origin for any of the converts. There are several possibilities for this omission. It may be that *Sa'aqtik'oy* was not occupied in the 1780s, or at that time it was used as a seasonal secondary settlement (Clericuzio and Delaney-Rivera 2012: 86). It is also possible that none of the Chumash who lived at *Sa'aqtik'oy* chose to convert to Catholicism and remained at their village while still interacting with the colonizers. The village was used as a satellite ranch area for Mission San Buenaventura, and cattle often grazed in the region. It is also known that the village was "resettled" after the secularization of the mission system, as evidenced by burials with historic artifacts found in the village cemetery (Lopez 1995:5). In 1860, the land containing the village and surrounding area was purchased by Moses Wells "from the Chumash, the springs which were contained within a 150-acre parcel made up mostly of boggy cienga" (Lopez 1995: 7). There were 43 "Indians" living in Saticoy near the village location, documented in the 1860 U.S.

Census. It is likely some of these Indians were those who participated in the last known Ventureño Chumash fiesta held in 1869 at *Sa'aqtik'oy*. This festival was hosted by Captain Pomposa, daughter of the previous Captain of the Saticoy Indians, Luis Francisco (Librado 1980:152).

Many of the archaeological and human remains of the village were disturbed during ranching and agriculture activities during the 20th century; however, there is an approximately 6-acre parcel, capped with about 20 feet of soil preserving the extant archaeological and human remains. The parcel is currently owned by the Barbareño/Ventureño Band of Chumash and is occasionally used for gatherings among members, and may eventually be reclaimed with native gardens and traditional uses.

Additional and more detailed ethnographic information is included in **Cultural Resources Appendix CR-1**.

Contemporary Tribal Entities with Cultural Affiliations

There are at least 15 Chumash California Native American tribal entities and individuals culturally affiliated with the project area. One of these groups, the Santa Ynez Tribe (and the affiliated Santa Ynez Tribal Elders Council), is federally recognized. The other groups and individuals are not federally recognized; however, Energy Commission staff consults with all tribes on the list provided by the Native American Heritage Commission (NAHC), regardless of recognition status. The NAHC letter to staff (Totton 2016) identified the tribal entities and individuals listed below which are further described in **Cultural Resources Appendix CR-1**.

Cultural Resources Table 2
California Native American tribes Consulted for the Proposed Mission Rock Energy Center

Tribe or Individual	Cultural Affiliation
Santa Ynez Band of Chumash Indians	Chumash
Coastal Band of Chumash Nation	Chumash
Barbareño/Ventureño Band of Mission Indians	Chumash
Beverly Salazar Folkes	Chumash
Patrick Tumamait	Chumash
Stephen William Miller	Chumash
Randy Guzman-Folkes	Chumash
Charles S. Parra	Chumash
Richard Angulo	Chumash
Carol A. Pulido	Chumash
Frank Arredondo	Chumash
PeuYoKo Perez	Chumash
Dr. Kote & Lin A-Lul'Koy Lotah	Chumash
Qun-tan Shup	Chumash
San Luis Obispo County Chumash Council	Chumash

Through these consultation efforts it was suggested that staff contact the Fernandeño Band of Mission Indians. Staff contacted this group but was told that the proposed project is located outside of their traditional area.

Historic Setting

The historic period in the vicinity of the project can be divided into three major periods, the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–Present). During the Spanish Period, the first significant Euro-American settlement in the area began with the Mission San Buenaventura, founded by Junipero Serra in 1782. The Mexican Period was characterized by land grants and ranchos awarded by Mexican Governor Juan Bautista Alvarado, leading to cattle ranching and dry farming in the Santa Clara River Valley. Several significant events near the end of the nineteenth century helped define the Santa Clara River Valley's role in California history. These events are: George Briggs established the first commercial orchard near the More Adobe in 1862; the Southern Pacific Railroad built the Santa Paula Branch Line through the valley in 1887; the Union Oil Company incorporated in 1890; and the Limoneira Company incorporated in 1891. A more detailed discussion of the historic period is provided in **Cultural Resources Appendix CR-1**.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Regulatory Context

California Environmental Quality Act

Various laws apply to the evaluation and treatment of cultural resources. CEQA requires the Energy Commission to evaluate cultural resources by determining whether they meet several sets of specified criteria that make such resources eligible to the California Register of Historical Resources (CRHR). Those cultural resources eligible to the CRHR are historical resources. The evaluation then influences the analysis of potential impacts to such historical resources and the mitigation(s) that may be required to ameliorate any such impacts.

CEQA and the CEQA Guidelines define significant cultural resources under two regulatory definitions: historical resources and unique archaeological resources. A historical resource is defined as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR", or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code," or "any object , building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." (Cal. Code Regs., tit. 14, §15064.5[a].) Historical resources that are automatically listed in the CRHR include

California historical resources listed in or formally determined eligible for the National Register of Historic Places (NRHP) and California Registered Historical Landmarks from No. 770 onward (Pub. Resources Code, §5024.1[d]).

Under CEQA, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. In addition to being at least 50 years old, a resource must meet one or more of the following four criteria (Pub. Resources Code, §5024.1):

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

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

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA requires the lead agency to make a determination as to whether the resource is a historical resource as defined in Public Resources Code, sections, 5020.1(j) or 5024.1.

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

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person." (Pub. Resources Code, §21083.2[g].)

To determine whether a proposed project may have a significant effect on the environment (CEQA defines historical resources to be a part of the environment), staff analyzes the project's potential to cause a substantial adverse change in the significance of historical or unique archaeological resources. The magnitude of an impact depends on:

- the historical resource(s) affected;
- the specific historical significances of any potentially impacted historical resource(s);
- how any historical resource(s) significance is manifested physically and perceptually;
- appraisals of those aspects of any historical resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- how much the impact will change historical resource integrity appraisals.

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

California Native American Tribes, Lead Agency Tribal Consultation Responsibilities, and Tribal Cultural Resources

Assembly Bill 52(AB 52) amended CEQA to define, California Native American tribes, lead agency responsibilities to consult with California Native American tribes, and tribal cultural resources. A "California Native American tribe" is a "Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission [NAHC] for the purposes of Chapter 905 of the Statutes of 2004" (Pub. Resources Code, § 21073). Lead agencies implementing CEQA are responsible to conduct tribal consultation with California Native American tribes about tribal cultural resources within specific time frames, observant of tribal confidentiality, and if tribal cultural resources could be impacted by project implementation, are to exhaust the consultation to points of agreement or termination.

Tribal cultural resources are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
   a. Included or determined to be eligible for inclusion in the CRHR.
   b. Included in a local register of historical resources as defined in the Public Resources Code, section 5020.1(k).
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in the Public Resources Code, section 5024.1(c). In applying the aforesaid criteria, the lead agency shall consider the significance of the resource to a California Native American tribe. (Pub. Resources Code, § 21074[a].)

A cultural landscape that meets the criteria of Public Resources Code, section 21074(a), is a tribal cultural resource to the extent that the landscape is geographically defined in terms of its size and scope (Pub. Resources Code, § 21074[b]).

Historical resources, unique archaeological resources, and non-unique archaeological resources, as defined at Public Resources Code, sections 21084.1, 21083.2(g), and 21083.2(h) may also be a tribal cultural resource if they conform to the criteria of Public Resources Code, section 21074(a).

This document, therefore, assesses the proposed project's impacts on historical resources, unique archaeological resources, and tribal cultural resources.

AB 52 also amended CEQA to state that a project with an impact that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code, § 21084.2).

HISTORICAL RESOURCES INVENTORY

Under Public Resources Code, section 21084.1, the development of an inventory of historical resources in and near the proposed project area is the requisite first step in the assessment of whether the project might cause a substantial adverse change in the significance of a historical resource, and could therefore have a significant effect on the environment. The effort to develop the inventory involved conducting a sequence of investigations that included doing background research, consulting with local Native American communities, conducting primary field research, interpreting the results of the inventory effort as a whole, and evaluating whether known cultural resources are historically significant. This section discusses the methods and the results of each inventory phase, develops the cultural resources inventory for the analysis of the proposed project, and interprets the inventory to assess how well it represents the potential for the PAA to contain cultural resources.

Project Area of Analysis

The PAA is a concept that staff uses to define the geographic area in which the proposed project has the potential to affect cultural resources. The effects of a project on historical resources can be immediate, further removed in time, or cumulative. Impacts may be physical, visual, auditory, or olfactory in character. The resultant PAAs may be contiguous, dis-contiguous or overlapping. PAAs include the project area, which would be the site of the proposed plant (project site), the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary facilities, in addition to one or several dis-contiguous areas where the project could potentially affect cultural resources.

Staff defines the archaeological PAA as comprising (a) the proposed project site and a one-mile radius (**Cultural Resources Figure 2)**. The built-environment (architectural) study area is defined as the area within a half-mile radius around the proposed project site (**Cultural Resources Figure 5)**.

For ethnographic resources, the area of analysis is expanded to take into account sacred sites, traditional cultural properties (places), and larger areas such as ethnographic landscapes that can be more encompassing, including viewsheds that contribute to the historical significance of such historical resources. The NAHC assists project-specific cultural resources consultants and agency staff in identifying these resources, and consultation with Native Americans and other ethnic or community groups may contribute to defining the area of analysis.

The area of analysis used by staff to identify ethnographic resources is the Santa Clara River Valley (**Cultural Resources Figure 4**). This area includes the Santa Clara River mouth in Ventura and extends east through the Valley to about Fillmore. Included in the ethnographic PAA are the mountain ranges that bound the Valley, South Mountain and the Sulphur Mountains. The basis for this area of analysis is information provided by King (1990: 91) and Glassow et al. (2007: 209), who suggest that Chumash groups lived in large, dense residential settlements near the coast, and utilized smaller inland camps based on seasonal needs.

Background Research

The background research for the present analysis employs information that the project applicant and Energy Commission staff gathered from literature and record searches, research, site visits and information that staff obtained from consultation with other entities. The purpose of the background information is to help formulate the initial cultural resources inventory for the present analysis, to identify information gaps, and to inform the design and the interpretation of the field research that will serve to complete the inventory.

Literature Review and Records Search

The literature review and records search portion of the background research is conducted to gather and interpret documentary evidence of the known cultural resources in the PAA. The source for the present search was the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS) located at California State University, Fullerton, California.

Staff also examined ethnographic sources concerning the Chumash and nearby Native American groups to ascertain any pertinent information regarding potential ethnographic resources in the PAA. Staff also examined prehistoric and historic references to supplement the analysis.

Staff reviewed historical accounts and planning materials on file at the Ventura County Surveyor’s Office, Museum of Ventura County, and the University of California, Santa Barbara Library Map Room.

Methods and Results

CH2M, the cultural resources consultant to the applicant, requested a records search from the SCCIC for Mission Rock. The records search covered the proposed project site and a one-mile radius surrounding it. The records search conducted by SCCIC staff on January 5, 2015, included ethnographic and historic literature and maps;

federal, state and local inventories of cultural resources; archaeological base maps and site records; and survey reports on file at the SCCIC. Source of cultural resources information included:

- NRHP listings and determinations of eligibility
- CRHR listings and determinations of eligibility
- Historic Property Data Records
- Known/recorded archaeological sites and associated Primary Forms
- Bibliography of all reports, surveys, excavations, inventories, and studies
- Historic maps
- Historic addresses
- California Points of Historical interest
- California Historical Landmarks
- California Office of Historic Preservation (OHP) Directory of Historic Properties – Records entered into the OHP computer file of historical resources, received quarterly
- California State Library
- California Historical Society
- County of Ventura Assessor's Office
- Ventura County Museum

The literature review and records search indicate that 11 previous cultural resource studies have been conducted within the proposed Mission Rock site, laydown area, and linears, and an additional 11 cultural resource studies have been conducted within the PAA. The records search revealed that six resources are located within the Mission Rock PAA, which include the Santa Clara-Ojai-Santa Barbara 66kV transmission line (P-56-153060), Beckwith Ranch ((P-56-152595), historic trash scatter (P56-001051H), and the Limoneira Ranch Aliso Village (P-56-152653). **Cultural Resources Table A3** and **Cultural Resources Table A4,** included in **Cultural Resources Appendix CR-1,** are complete lists of all resources included in the previous studies prepared for the Mission Rock PAA.

Additional Literature Review

Staff conducted additional research at the SCCIC, Energy Commission in-house library through inter-library loans services, California History Room of the California State Library in Sacramento, the Ventura County Museum, online sources, informal discussions with San Buenaventura Research Associates staff and Ventura County planning staff, as well as consulted the reports contained in the applicant's records searches (Lawson et al. 2015). The purpose of this research was to obtain an understanding of the natural and cultural development of the land in and around the

PAA, identify locations of potential historic built environment, archaeological resources, and ethnographic resources, and have a partial, chronological record of disturbances in the PAA. All consulted historic maps are presented in **Cultural Resources Table A5** in **Cultural Resources Appendix CR-1**.

Native American Consultation

Methods

The Governor's Executive Order B-10-11, executed on September 19, 2011, directs state agencies to engage in meaningful consultation with California Indian Tribes on matters that may affect tribal communities. The Energy Commission adopted a Tribal Consultation Policy on December 10, 2014. The Energy Commission Siting Regulations require applicants to contact the NAHC for information on Native American sacred sites and a list of Native Americans interested in the project vicinity. The applicant is then required to notify those Native Americans on the NAHC's list about the project and include a copy of all correspondence with the NAHC and Native Americans, including any written responses received, as well as a written summary of any oral responses (Cal. Code Regs., tit. 20, §1704[b][2], Appendix B[g][2][D]). Recent amendments to CEQA require CEQA lead agencies to conduct tribal consultations in specific ways.

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

The NAHC maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC's Sacred Lands database has records for areas, places, sites and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for tribal entities that have expressed an interest in being contacted about projects proposed in specific tribally-affiliated areas.

Results

Energy Commission regulations require the applicant to contact the NAHC for information on Native American sacred sites and lists of California Native American tribes interested in projects in the vicinity of proposed Energy Commission facilities. In an effort to conduct an independent analysis of ethnographic resources, staff also requested information from the NAHC on the presence of sacred lands in the vicinity of the proposed project, as well as a list of tribal entities to whom inquiries should be sent to identify both additional cultural resources and any concerns the they may have about the proposed project.

Staff contacted the NAHC in April 2016 and requested a search of the Sacred Lands File and a Native American contacts list. The NAHC responded on May 5, 2016 with a list of tribal entities interested in consulting on development projects in the project area. A check of the NAHC Sacred Lands File failed to indicate any Native American traditional sites/places within the project site.

Staff sent letters or emails to all of the NAHC-listed California Native American tribes on May 24, 2016 inviting them to comment on the proposed project and offering to hold face-to-face consultation meetings if any tribal entities so requested. An email was received from one group on June 23, indicating that while they are interested in being updated on the progress of the project, they do not feel the need to be involved at this point in the process. Two other tribal entities declined the Energy Commission's invitation to consult and deferred to groups closer to the project area.

Staff held in-person meetings with three tribal entities, two of which were during the Environmental Scoping Meeting and Informational Hearing related to the project on June 28, 2016. Concern for buried resources in the proposed project area and the need for Native American monitoring during all ground disturbing activity was expressed at these meetings by both groups, Patrick Tumamait and Charles S. Parra. The third meeting was held March 30, 2017 with the Barbareño/Ventureño Band who echoed concerns related to buried resources and additionally recommended shovel tests or test trenches before construction, particularly along project linears, in order to identify any buried resources prior to them being impacted by initial construction activities. In particular, the group stated cultural resources "monitoring is not adequate mitigation" because the resource is damaged before the monitor is able to detect it.

Other Consultation Efforts

A comment letter (Thompson 2016) was received on December 19, 2016 from the Wishtoyo Chumash Foundation (Wishtoyo), a non-profit environmental advocacy group. This comment letter, opposing Mission Rock, addressed concerns about impacts related to cultural resources, including tribal cultural resources, traditional cultural landscapes, biological resources, environmental justice, visual resources, air quality, soil and water resources, noise and vibration, hazardous materials management, worker safety and fire protection, and the need for Native American consultation. Staff contacted the author of the letter. While that contact did not lead to further understanding of the resources Wishtoyo wishes to protect, staff looks forward to any future comments Wishtoyo may provide regarding the proposed project.

One of the documents provided in the Wishtoyo letter linked to a documentary, *Weaving Community: How Native Peoples are Rediscovering Their Basketry Traditions*. In this short film a basket weaver is interviewed and mentions that she collects basketry materials at an area along the Santa Clara River. Staff contacted the basket weaver and spoke by telephone. However, due to time constraints the weaver suggested further information should be obtained from the Wishtoyo Chumash Foundation. Staff reached out to the suggested contact by email and phone, but did not receive a response before Wishtoyo filed a petition to be an intervenor to the proceedings.

Since Wishtoyo is now a party to the proceedings, staff anticipates further information regarding these resources will come in the form of comments on this Preliminary Staff Assessment and any future workshops.

Environmental Justice

In accordance with federal and state law, regulations, policies, and guidance, staff considered the proposed project's potential to cause significant adverse impacts on environmental justice populations (E.O. 12898; 40 C.F.R., §§1508.8, 1508.14; Cal. Code Regs., tit. 14, §§15064(e), 15131, 15382; Cal. Code Regs., tit. 20, §1704(b)(2), App. B(g)(7); CEQ 1997). **Environmental Justice Figure 1** shows the presence of an environmental justice (EJ) population based on race and ethnicity within a six-mile radius of the project site. **Environmental Justice Figure 2** and **Table 3** show that the below-poverty-level population in the Santa Paula Census County Division and population receiving free or reduced price meals in the Rio Elementary School District and Somis Union School District constitute an EJ population based on low income. Staff also reviewed ethnographic and historical literature, and conducted consultations with California Native American Tribes to determine whether any Native American populations use or reside in the project area. There is an area used by at least 15 Native American individuals for the collection of traditional materials, *juncus*, tule, yerba mansa, and red bud and arroyo willow, located upriver from the proposed Mission Rock site. However, at this time staff does not fully understand the extent of this resource or the potential impacts to it, and therefore cannot conclude at this time if Native Americans should be considered an environmental justice population for this project. Staff anticipates that additional consultation efforts with California Native American Tribes, as well as comments from Wishtoyo and any future workshops will elucidate this information.

Cultural Resources Distribution Models

One critical use of information collected during the background research for a cultural resources analysis is to inform the design and the interpretation of the field research that will complete the cultural resources inventory for the analysis. Most of the background research for the present analysis of Mission Rock was conducted for the AFC (Lawson et al. 2015). A further role of background research is to help develop models that predict the distribution of cultural resources across the PAA. Such models provide the means to tailor more appropriate research designs for the field investigations intended to complete a cultural resources inventory. These models help gauge the degree to which the results of those investigations may reflect the actual archaeological, ethnographic, and built-environment resources in the PAA. Such models also provide important contexts for the ultimate interpretation of the results of those investigations.

Models for predicting the distribution of prehistoric, ethnographic, and historic resources are developed here and are based upon information in the "Environmental Setting," "Prehistoric Setting," "Ethnographic Setting," and "Historic Setting" subsections of **Cultural Resources Appendix CR-1**, in addition to the information in the "Background Research" subsection of **Cultural Resources Appendix CR-1**. The discussions in the "Interpretation of Results" subsection below employ the models.

Model for predicting Prehistoric Resources

The analysis of the information in the "Environmental Setting," "Prehistoric Setting," and "Background Research" subsections of the **Cultural Resources Appendix CR-1** leads to the conclusion that the likelihood of prehistoric deposits across the surface of the PAA is low, but that there is a very high potential for subsurface prehistoric deposits in the PAA.

Whether the applicant would encounter buried prehistoric deposits during construction depends on several factors, including:

- the location and depth of construction
- the depositional character and the ages of the sedimentary deposits that construction would disturb
- the presence of buried land surfaces or buried surfaces of ancient soils (paleosols)
- the duration or stability of any paleosols
- the post-depositional character of geomorphic processes in the PAA
- the nature of past human activities in the area

According to the *Geology* and *Geomorphology* subsections in **Cultural Resources Appendix CR-1**, the Santa Clara River Valley formed during the Plio-Pleistocene period about 5 million years ago, with thick Holocene-aged alluvial deposits deposited above. The age and depositional character of these Holocene deposits are such that prehistoric resources are likely to be buried under them. Agricultural development in the PAA has likely disturbed the top 10 to 20 inches of deposits throughout the Valley, but the thickness of the alluvial deposits would preserve much of any stratified extant archaeological deposits. Additionally, the flood caused by the break of the Saint Francis Dam in 1923 deposited thick layers of silt that likely further buried and obscured surface manifestations of prehistoric resources.

For example, some archaeological researchers suggest that the lack of surface manifestations of prehistoric sites in the Santa Clara River Valley is due to the high-energy depositional environment of the Santa Clara River, and in particular the Saint Francis Dam disaster in 1923. This flood deposited,

> "three to six feet of silt as far north as Highway 126. Although some of the silt was bulldozed to create dikes, other devastated areas had orchards planted on top of the silt. The potential for alluvial deposition either by siltation from the Santa Clara River, or mud flows from the northern mountains, continues to play havoc with the reliability of surface surveys" (Wlodarski 1999:75).

This depositional event, occurring within the PAA, is a significant contributor to the lack of surface archaeological resources as reported in the AFC.

The applicant suggests that human habitations, e.g., large village sites, "are expected along rivers and perennial streams, and adjacent to perennial springs, and are unlikely to occur anywhere else in inland habitats" (Lawson et al. 2015: 7). Therefore, the proposed power plant site "possess[es] high archaeological sensitivity at depth" (Lawson et al. 2015: 7). The area of high archaeological sensitivity (approximately 1.5 miles) also applies to the transmission line, natural gas pipeline (both routes A and B), and the water supply line. The applicant also suggests that the barrancas[3] are not as sensitive as the areas closer to the river because the barrancas are largely dry water courses. The applicant also asserts there is decreased sensitivity for human habitation sites on the alluvial plain of the Sulphur Mountains and the foothills of the mountains, i.e., the route of the generator tie line north of pole 10. Staff generally agrees with this assessment, but notes that prehistoric resources can result from behaviors other than human habitation that are not as reliant on a regular water supply as habitation (e.g., resource procurement, ceremonies, trade) and that the sensitivity for these resource types remains moderately high throughout the PAA. Additionally, the area along the river and barrancas retains high potential for buried historic archaeological resources, as noted below.

Model for predicting Ethnographic Resources

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

In addition, ethnography has merits of its own by providing information concerning ethnographic resources that tend to encompass physical places, areas, or elements or attributes of a place or area. Ethnographic resources have overlap and affinity to historic preservation property types referred to as cultural landscapes, sacred sites, heritage resources, or historical resources that are objects, features, sites, places, areas or anything considered by affiliated tribal entities to be tribal cultural resources. There is notable overlap in terminology when referring to ethnographic resources. Studies that focus on specific ethnographic resource types may also take on names such as ethnogeography, ethnobotany, ethnozoology, ethnosemantics, ethnomusicology, etc.

[3] Barranca is defined by Merriam Webster as "a deep gully or arroyo with steep sides", and staff uses this term throughout the document in reference to those natural and channelized waterways that Mission Rock linears would cross. Historic literature and local vernacular commonly refer to these intermittent waterways using the term barranca.

While several definitions of ethnographic resources can be found in historic preservation literature, the National Park Service (NPS) provides the most succinct and commonly used definition (NPS 2007: Chapter 10):

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

Ethnographic Methods

Ethnographic methods, when applied to projects of limited size and scope involve four steps.[4]

Step 1 involves reviewing the project description and mapped project location and, based upon the geographic and environmental setting, formulate preliminary guiding questions that may be asked of people with cultural affiliation to the project area.

Step 2 involves contacting, informally discussing with, (or formally interviewing) people who might have a cultural relationship or affiliation to a given area.

As Step 2 is being conducted, a parallel Step 3 involves archival “search, retrieve, and assess” process that should be undertaken to provide supporting or conflicting information to what is being discovered through the discussion process. In addition to archives, book stores, and other informational repositories (e.g., the internet), the people themselves or other ethnographers with previous experiences with the same people, may provide source materials. Findings in Step 3 may require a repetition of Step 2.

Step 4 involves field visit(s) that are intended to help the ethnographer triangulate between what people currently say, what people have written in the past, and what is actually or perceived to be in the project vicinity as a potential ethnographic resource.

Preliminary Guiding Research Domains

Based upon the project description and project location maps, three preliminary research domains were developed.

- The Chumash village of *Sa’aqtik’oy* is located on several maps in the vicinity of the proposed project, about 1.5 miles west of the transmission line. Research the location and any other information regarding this village site.

[4] See Pelto 2013, Chapter 16 for an overview of applied ethnographic methods for conducting focused inquiry conducted in limited timeframes.

- There are several other Chumash villages located in the Santa Clara River Valley. Research these locations, and any other information regarding these village sites, and the relationship among these villages.
- Research contemporary Chumash connections to prehistoric sites, subsistence gathering areas, and landscape features near the proposed project site and around Santa Paula, as mentioned in the Wishtoyo letter (Thompson 2016).

As documented in the "Native American Consultation" subsection, staff is in contact with several different Native American groups regarding this project, and consultations are on-going.

Interviews

Staff did not complete any formal interviews for inclusion in the PSA. However, an informal interview with a Chumash basket weaver was conducted by phone in March 2016, identifying a basketry and traditional collection area several miles upriver from the proposed project.

Archival Research

Staff made efforts to seek, obtain, and assess culturally relevant information from various archival sources. Information specifically sought related to *Sa'aqtik'oy*, the relationship between *Sa'aqtik'oy* and contemporary Chumash, the gathering area upriver, as well as other archaeological sites in the vicinity of Santa Paula. Repositories visited included the California History Room at the California State Library, Inter-library loan resources through the in-house Energy Commission Library, the Ventura County Museum, and a supplemental ethnographic record search at the SCCIC.

Field Visit

Staff visited the project area and its surroundings several times, most recently in March of 2017. Staff's visual observation of the project site and vicinity did not result in the field identification of ethnographic resources.

Ethnographic Method Constraints

Constraints on the ethnographic methods described above are twofold:

1. Communication with some of the California Native American Tribes with knowledge has been sporadic, and
2. Much of the Santa Clara River Valley was converted to agriculture over the past 100+ years, obscuring and destroying many ethnographic resources.

Model of Historic Archaeological Resources

The analysis of the information in the "Environmental Setting," "Historic Setting," and "Background Research" subsections of **Cultural Resources Appendix CR-1**, leads to the conclusion that historic archaeological deposits are likely across the surface of the

PAA and there is a high potential for subsurface historic archaeological deposits as well. Along the river and barrancas there is a high potential for historic archaeological deposits associated with a workers' housing camp subdistrict, featuring both formal camps with structures and informal tent camps (McBane 2001:266).

The primary historic land uses near Mission Rock are agricultural and industrial uses. Thus, potential buried historic archaeological resources in the PAA are expected to consist of refuse deposits associated with domestic, agricultural, and industrial disposal. In particular it is expected that subsurface irrigation features associated with agriculture could be encountered during ground disturbing activities.

Cultural Resources Inventory Fieldwork

The field efforts to identify cultural resources in the PAA consisted of the applicant's pedestrian archaeological and historic built-environment surveys, archaeological and built-environment monitoring reports for other projects in the PAA, and staff's field visits to the proposed project site and vicinity. On the basis of the applicant's background research for the present analysis, staff investigations and the results of the field efforts that are presently available, the total cultural resources inventory for the PAA includes four archaeological, 225 built-environment resources, and two potential ethnographic resources.

This section discusses the methods and the results of each field inventory phase and interprets the cultural resource inventory relative to the resource distribution models mentioned above, to assess how well the inventory represents the archaeology of the project area. Descriptions of each cultural resource in the inventory, consideration of and potential impacts on archaeological resources that may lie buried on the project site, and proposed mitigation measures for significant impacts.

Pedestrian Archaeological Survey

Methods

As stated in the AFC, U.S. Secretary of the Interior qualified archaeologists surveyed the project site, generator tie lie, portions of Route B of the natural gasline, and the reclaimed water pipeline on October 6 and 7, 2015. Supplemental surveys of areas with poor ground surface visibility due to crops were conducted in February and October of 2016. Route A of the natural gas line was surveyed on January 26, 2017.

The surface of the project site consists of pavement and there is no visibility of soils. Visibility in the survey area along the routes of proposed linear features ranged from excellent, particularly near the substation, to poor, particularly in orchards (Lawson et al. 2015:32).

Staff analysis of the literature, historic maps, and aerial photographs related to the Santa Clara River Valley Rural Historic District identified a potential extant historic archaeological resource (The Flats/El Arco/Camp 900) that was not identified by the applicant in previous documentation efforts, in the same location as one of the poles associated with the generator-tie line. Secretary of the Interior qualified archaeologists conducted an intensive level pedestrian survey of the resource in January of 2017.

Results

No surficial prehistoric or historic archaeological resources were identified during the applicant's pedestrian survey.

At The Flats/El Arco/Camp 900 site, staff recorded over 1,200 artifacts scattered over a 688,248 square foot area.

Historic Built Environment Survey

The applicant conducted a built environment survey of the Mission Rock PAA on October 6-7, 2015 and the results are included in the AFC. The applicant examined the proposed project site, laydown area, linear facility routes, and the transmission line corridor. Fifty-eight built environment resources were identified in the PAA. The applicant concluded that 37 of the 58 resources were eligible for listing on the California Register of Historical Resources (CRHR). In 1995-1996, the County of Ventura received a Certified Local Government grant from the California Office of Historic Preservation (OHP) to undertake a comprehensive study of the Western Santa Clara Valley, entitled *Ventura County Cultural Heritage Survey Phase V: Western Santa Clara Valley* (Triem and Stone 1996). This survey resulted in the designation of the Santa Clara Valley Rural Historic District (SCVRHD), a historic landscape reaching from Santa Paula to Saticoy and from the Santa Clara River into the northern Sulphur Mountain foothills, encompassing several thousand acres. The SCVRHD is listed on the local register (Ventura County Landmarks and Points of Historical Interest), and was found eligible for listing on the CRHR and the National Register of Historic Places (NRHP). A complete discussion of the historic landscape and its contributing elements is provided in **Cultural Resources Appendix CR-1**. During the October 2015 fieldwork, the applicant noted that many of the contributing resources of the SCVRHD were not accessible. The lack of a complete built environment survey was noted in the AFC in several places. In addition, the applicant did not identify the location of many contributing resources to the historic district, but instead focused their analysis primarily on buildings, despite the extensive historic district record (Triem and Stone 1996) that provides detailed descriptions of a range of contributing elements of the historic district.

Energy Commission Cultural Resources staff toured the project site and conducted a reconnaissance survey of the PAA on June 8, 2016 to field verify the 37 built environment historical resources identified by the applicant's consultant. Staff noted some access issues but also noted a number of resources accessible to the applicant's consultant that had not been documented. Staff again visited the project area in September 2016 to field verify potential contributing resources to the SCVRHD.

Through the Data Request/Data Response process, staff requested the applicant make additional efforts to obtain permission from landowners to access parcels and obtain locational information for potential contributing elements of the SCVRHD. A complete discussion of potential contributors to the SCVRHD is located below. The applicant was able to gain access to 40 parcels in the survey area. **Cultural Resources Figure 5** shows the parcels the applicant was able to access for survey fieldwork. The applicant recorded resources by dividing the survey up into three sections. The supplemental survey identified three subsidiary road segments, an oil extraction system with several components, and three separate but similar irrigation systems. The survey documented contributing buildings in the PAA, including main residences, worker's houses, barns, packing houses, and outbuildings. The applicant also made an effort to record small features such as orchard heaters, fans, and wagons.

Following additional research and fieldwork, the applicant's consultants recorded upwards of 180 buildings, structures, sites, and features within the PAA. The majority of these resources falls within the SCVRHD's period of significance and are contributors to the historic district. The significance and potential impacts to these resources are discussed below under "Built Environment Resources."

The AFC and supplemental survey work have been combined in **Cultural Resources Table A4 and A6 in Cultural Resources Appendix CR-1** to provide an overview of the cultural resources identified in the PAA.

One-Mile Literature and Records Search Area

The SCCIC search for Mission Rock included seven studies involving built environment features within the PAA. These previously recorded resources include several local Ventura County Landmarks, oil drilling operation remnants, transmission towers and the SCVRHD, a rural historic landscape consisting of farmsteads, farm equipment, fields, irrigation facilities, crops and crop patterns, and transportation infrastructure that exemplify the historical development of agricultural products and farming techniques in the Santa Clara Valley from 1860 to 1966. These reports are listed in **Cultural Resources Tables A3** in **Cultural Resources Appendix CR-1**.

Cultural Resources Table A6 in **Cultural Resources Appendix CR-1** lists all the historic built environment resources that are listed on the NRHP/CRHR or have been identified as landmarks by Ventura County in the vicinity of project.

In addition to the literature and record search results prepared by the applicant, staff also reviewed other recent reports relative to other environmental studies in the vicinity, i.e., *Historic Resources Report East Area 1 Specific Plan EIR Santa Paula, California* (Triem 2007); *Historical Ecology of the Lower Santa Clara River, Ventura River, and Oxnard Plain* (SFEI 2011); *Hardison House Phase I-II Historic Resources Report* (Triem 2015); and *Conservation Plan for the Lower Santa Clara River Watershed and Surrounding Areas* (Nature Conservancy 2008).

Cultural Resource Descriptions and Eligibility Evaluations

Staff has identified a total of 231 cultural resources in the PAA. Of these, one is a prehistoric site (P-56-100223), three are historic sites (The Flats/El Arco/Camp 900, P-56-001051, and DS-S-01), two are possible ethnographic resources (traditional gathering area, and traditional cultural landscape), and 225 are built-environment resources.

Prehistoric Archaeological Resources

P-56-100223

This isolated basal portion of a sandstone bowl or mortar was recorded in 1989. This fragment measured 16.2 cm X 12.3 cm X 4 cm. It was not relocated by the applicant during their surveys in 2015 or 2016.

Historic Archaeological Resources

The Flats/El Arco/Camp 900

Staff recorded this site in January 2017, documenting over 1,200 surface artifacts including window glass, blue glass, green glass, brown glass, clear bottle glass, decorative glass, insulator glass, metal pieces, marbles, various types of household dinnerware ceramics, kitchen/bathroom ceramics, tin cans, pots, knob and tube wiring elements, and brick. These artifacts cover the orchard in the area where the housing was located and along the barranca. There are two main loci of deposits along the northern and eastern portion of the site, which were likely dumps for the camp. South of the orchard and across the barranca are three settling ponds that were used for sewage treatment at the camp, as well as historic farm equipment. Modern trash and irrigation equipment is scattered across the site. This resource was some of the first worker housing built by the Limoneira company after the Olivelands acquisition in 1906. The camp consisted of about 21 houses and 1 communal building, roads, and gardens.

P-56-001051

This historic trash scatter was recorded in 1989 and consisted of sun-colored amethyst glass, glass container fragments, whiteware decal ware, transfer print ceramics, pink bisque porcelain, square nails, and canning lids. The artifacts appeared to date from the 1880s-1920s. The site was not relocated by the applicant.

DS-S-01

This historic site was recorded by the applicant in February 2017 and consists of a dirt road turnout with a refuse dump of equipment and material debris related to horticulture, including 150+ concrete oval distributing hydrants overlaid by a utility pole, three pieces of agricultural equipment including two wagons and portions of an implement, and a concentration of debris including preformed concrete pipe segments, crushed PVC piping, wire fencing, sheet metal, and metal lined wooden wagon wheels. This historic site is located in close proximity to one of the proposed poles associated with the generator tie-line.

Ethnographic Resources

Traditional Gathering Area

A plant gathering area was mentioned in a public television documentary about basket weaving, and this place was confirmed by telephone between staff and a traditional gatherer. According to the basket weaver, the area is located several miles upriver from the proposed project and is used by at least 15 individuals to collect traditionally used plant materials including, *juncus* spp., tule, yerba mansa, and red bud and arroyo willow. This was the extent of the information provided by the basket weaver, and she recommended contacting an individual at Wishtoyo for additional details about the site and visiting. Staff followed up with this individual via phone and email, but did not receive a response prior to Wishtoyo filing for intervenor status. Now that Wishtoyo is a party to the proceedings, staff can no longer discuss substantive matters with Wishtoyo such as the resource and impacts to it, but looks forward to any comments Wishtoyo may make regarding the resource and working with them at future workshops. Based on staff's current understanding of this resource, it may qualify as an CRHR-eligible tribal cultural resource. However, staff is continuing to consult with California Native American tribes to better understand the complexity and extent of the resource. A full description, CRHR evaluation, and analysis of this resource and any impacts to it may be included in the Final Staff Assessment.

Cultural Landscape

The Wishtoyo comment letter suggests some Chumash understand the Santa Clara River Valley as a traditional cultural landscape resource with a high degree of sensitivity to visual impacts. This landscape is described as including "the land that our ancestors were buried in, prayed in, and utilized, [the landscape] contains all the wildlife in the Santa Clara watershed, undeveloped hillsides, the Santa Clara River, small creeks, mountains, valleys, and our ancestor's remains" (Thompson 2016:9-10). In response to this letter, staff conducted research with the published literature regarding historical and contemporary Ventureño practices in the Santa Clara River Valley, and continues to consult with California Native American tribes in the area to better understand this resource.

Staff understands that some Native Americans tend to view their environment in a more holistic way than those who take a Western-based view of science and culture. For example, from this perspective, a traditional gathering area is not a discrete entity or resource apart from the larger Santa Clara River Valley traditional cultural landscape; these resources are entwined and interdependent upon each other in such a way that they should not be considered separately.

Staff is working to understand this complex resource and has conducted research in support of this effort. This research included collecting information regarding Chumash plant and animal use, with a particular focus on Ventureño Chumash practices (**Cultural Resources Tables A1 and A2** in **Cultural Resources Appendix CR-1**). Staff also conducted a record search at the SCCIC within the ethnographic PAA to better understand the archaeological resources that could be encompassed in the landscape. Unfortunately due to extensive development in the Valley prior to cultural resource protection and documentation laws (e.g., CEQA), and because of the flood event of

1923, few significant prehistoric archaeological resources were recorded in the ethnographic PAA.

Despite a paucity of archaeological site records of prehistoric resources, several sources document multiple Chumash villages in the PAA (**Cultural Resources Figure 4)**; *Shisholop* (in Ventura, near mouth of the Ventura River), *Ishwa* (at mouth of the Santa Clara River), *Alcui* (in canyon of Sulphur Mountain foothills, east of downtown Ventura), *Canaputegnon* (exact location unknown, likely in Oxnard Plain south of Santa Clara River), *Sa'aqtik'oy* (in town of Saticoy), *Sisuicui* (north of Saticoy in canyon of Sulphur Mountain foothills), *Mupu* (in Santa Paula, on Santa Paula Creek), *Alalhew* (north side of Santa Clara River, east of Santa Paula, west of Sespe Creek), and *Sespe* (near present day town of Sespe) (King 1971:30; King 1975: 175; Kroeber 1976:526; McLendon and Johnson 1999:31; Northwest Economic Associates et al. 2014:Figure 44, 219). **Cultural Resources Figure 1** shows multiple locations for some of the same village sites; a result of imperfections in the source maps that manifest themselves when rectified in a geographic information system layer.

Extensive agriculture on the Valley floor and alluvial plain of the Sulphur Mountains has rendered much of the Santa Clara River Valley unrecognizable from the pristine Valley documented by early explorers in the 18th century. For example, in 1769 Fray Juan Crespi wrote,

> August 12. At three o'clock on the afternoon of Saint Clare's day, we set out from the river and two springs here at the place of the same saint, Santa Clara, following down the course of the hollow and river here, course west-southwestward. Close by this spot there was a sort of high tableland that had kept us from viewing what the hollow's course was: shortly we went up onto it, and could see the hollow extending for some leagues further on, quite wide, and very grass grown with a very tall, broad sort of grass. The river ran alongside us some distance away to the left, all lined with the aforesaid kinds of trees, with a great deal of green flats along its bank, and there were also sycamores, live oaks, willows, and white cottonwoods here and there over the tableland we were following, and here on the tableland we came across patches of a good deal of stone that is good for building. Before we had gone two leagues, we crossed two more running streams with good-sized flows of water dropping down through hollows from the mountain and running into the river that we bore upon our left. On going two hours, all over level land, in which we must have made two leagues, we stopped in this same hollow not far from the trees in the river, where we met with a good-sized heathen village, encamped within the woods close to the river, where there is green grass (Brown 2001:383-384).

Most of the landscape constituents documented by Crespi do not exist today; few trees and tall grasses remain throughout the Valley because most of the land has been converted to agriculture or otherwise developed. However, there is a portion of the Santa Clara River Valley that still retains much of its historical character, i.e., the Santa Clara River itself. The Santa Clara River is the largest river system in California that remains in a relatively natural state, i.e., dams do not control the water flow (Nature

Conservancy 2008:8). Because of its natural state, native ecosystems rich in biodiversity are present throughout the watershed. Additionally, the Nature Conservancy, a non-profit environmental conservation organization, is working to protect the riverine ecosystem by purchasing over 3,000 acres encompassing large portions of the Santa Clara River in the lower watershed. The Conservancy owns much of the riparian area, from the project area east along the river to Santa Paula, with additional parcels along the river as far east as Piru. The area identified as a traditional gathering area is not part of the Nature Conservancy's holdings, but is part of 220 acres owned by the Friends of the Santa Clara River, approximately 48 acres of which have been restored with funding from the U.S. Fish and Wildlife Service (Worden 2011).

Staff contacted the Nature Conservancy regarding their relationship with Chumash groups in the Ventura area and whether they have any agreements in place with any Native American groups to allow collecting on their properties. Representatives from the Conservancy stated that they have never been asked to allow access or traditional practices on their properties, but would be open to the idea as long as those practices are compatible with the Nature Conservancy's goals.

The mountain ranges that bound the Santa Clara River Valley, South Mountain and the Sulphur Mountains, have been subject to development albeit to a lesser degree than the Valley floor. Oil development began in the late 19th century, some of the earliest in California, and oil derricks dot the hillsides and valley floor of the Santa Clara River Valley. Most of the land on South Mountain is privately owned, while the foothills and lower elevations of the Sulphur Mountains are mostly privately owned and the higher elevations are publicly owned (i.e., U.S. Forest Service).

Based on this information staff understands this cultural landscape to most likely be extant in the riparian corridor of the Santa Clara River, possibly a cultural riverscape embedded within the more encompassing traditional cultural landscape identified by Wishtoyo. A riverscape is an adaptation of the landscape concept such that the focus is on the river and its vicinity. Thomas King (2004:4) defines a cultural riverscape as "a river and its environs, including their natural and cultural resources, wildlife, and domestic animals, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values" (King 2004:3). The relatively intact ecosystem of the Santa Clara River retains much of its historic character, and many of the assumed contributing elements to the landscape, e.g., water, plants and animals, are those that one would have found hundreds of years ago.

That being said, at this time staff is unsure how the Santa Clara River Valley and the embedded cultural riverscape is used by Native Americans and how the proposed Mission Rock project could impact this resource. Now that Wishtoyo is a party to the proceedings, staff can no longer discuss substantive matters with Wishtoyo such as the resource and impacts to it, but looks forward to any comments Wishtoyo may make regarding the resource and working with them at future workshops. Staff anticipates additional information will become available through California Native American Tribal consultations, comments from Wishtoyo, and future workshops, enabling staff to more clearly define this resource and assess impacts in time for publication of the Final Staff Assessment.

California Register of Historical Resources Eligibility

Archaeological Resources

Regarding the sites described in detail above, staff does not recommend that P-56-100223 is eligible for the CRHR as the artifact is an isolate and there is no archaeological context or provenience for the artifact. Sites P-56-001051 and DS-S-01 are not recommended individually eligible for the CRHR, but they are recommended eligible as contributing elements to the SCVRHD because these trash scatters are a result of activities related to the historic district.

The Flats/El Arco/Camp 900 is significant for its ability to convey the immigrant experience of Mexican families and later Bracero Program contract workers in the citrus industry. The site appears individually eligible for listing on the CRHR per Criteria 1 and 4. Specifically, under Criterion 1 the site is associated with the immigrant experience of the first wave of Mexican agricultural workers in Southern California (1910-1941) and for its role in housing Bracero Program contract workers (1941-1968). The site contains the historical record of nearly 60 years of occupation by Mexican workers including the experience of their forced removal after the strike of 1941, and the transition of El Arco from family housing into a Bracero Program housing camp. Under Criterion 4, the El Arco site contains important historical information and is able to convey a great deal of knowledge within the historical context of American Immigration in the first half of the 20th Century. This site retains a high degree of integrity of location, setting, materials, feeling, and association.

Ethnographic Resources

Staff does not have enough information at this time to make a conclusion with regard to the eligibility of the traditional collecting area or the traditional cultural landscape. Staff anticipates that continued consultation with Native Americans will help to address the necessary information to fully define the resource and evaluate its eligibility in time for publication of the Final Staff Assessment.

Built Environment Resources

Cultural Resources Figure 6 provides an overview of CRHR-eligible built environment resources, and resources evaluated but found ineligible within the PAA. There are likely additional contributing resources located on parcels where survey access was not granted to the applicant by the property owners. During the original and secondary survey effort the applicant was able to identify over 225 individual resources, including approximately 80 buildings, three subdistricts, over a dozen farm clusters, nine road segments, one oil extraction system, and three irrigation systems. The applicant was unable to provide documentation of trees in the PAA that contribute to the historic district, despite specific requests by staff. Staff is in the process of supplementing this omission by documenting tree rows in the PAA. These tree rows are identified in **Cultural Resources Figure 6**.

Previously Recorded Historic Age Structures within the PAA and One Mile Literature Search Area

The applicant identified 38 previously recorded resources within the half mile PAA and one mile literature search area. Two resources were determined ineligible for the CRHR: the Santa Clara-Ojai-Santa Barbara 66kV Transmission Line and the SCE Santa Clara Substation and switch yard. The remaining 36 resources are contributors to the SCVRHD and were previously determined eligible for listing in the CRHR under criteria 1 and 3, and the NRHP under criteria A and C (Triem and Stone 1996). Of these, two resources are individually eligible for listing in the NRHP under the same criteria: the More Adobe and associated Edwards Ranch Subdistrict, and the Sharp-Thille main residence and associated subdistrict. The applicant agrees with all previous evaluations and notes that all resources which were previously eligible for the CRHR and the NRHP continue to retain their eligibility and integrity. Staff agrees with the applicant's evaluation that the previously documented 36 resources continue to retain their eligibility and integrity, and the Santa Clara-Ojai-Santa Barbara 66kV Transmission Line and SCE Santa Clara Substation are ineligible for listing on the CRHR or the NRHP under any criteria.

Santa Clara-Ojai-Santa Barbara 66kV Transmission Line

The Santa Clara-Ojai-Santa Barbara 66kV Transmission Line spans approximately 34-miles between the SCE Santa Clara Substation and the SCE Santa Barbara Substation. The transmission line is segmented by the SCE Casitas Substation near State Route 33. The transmission line was evaluated by Wendy Becker of Urbana Preservation & Planning in 2012 and was given a status code of 6Z, not eligible for listing on the National Register of Historic Places or the California Register of Historical Resources. The 23-mile long portion of the line was constructed in 1932 from the Casitas Substation to the Santa Barbara Substation. Several original sections of the line were removed and additional modifications occurred in 1964 and 1979. Becker concluded that "[no] information has been identified during the course of historical research to substantiate a positive eligibility finding for the Santa Clara-Ojai-Santa Barbara 66kV Transmission line." The transmission line is recommended not eligible for the CRHR under Criteria 1-4 and therefore is not considered a historical resource under CEQA.

SCE Santa Clara Substation

The SCE Santa Clara Substation and switch yard is located at the intersection of Long Canyon Road and Elizabeth Road. The substation was evaluated by Wendy Becker of Urbana Preservation & Planning in 2012 and was given a status code of 6Z, not eligible for listing on the National Register of Historic Places or the California Register of Historical Resources. Constructed in 1958, the substation complex is one of hundreds constructed by SCE in the post-war period in Southern California. It is not associated with persons significant to the history of Ventura County or Southern California. Nor does it contain any buildings or structures of architectural significance or is the substation likely to contain information important to our understanding of engineering or electrical transmission. The SCE Santa Clara Substation is recommended not eligible for the CRHR under Criteria 1-4 and therefore is not considered a historical resource under CEQA.

Santa Clara Valley Rural Historic District (SCVRHD)

The proposed Mission Rock project is located in a portion of the western Santa Clara Valley that has been nominated and listed on the Ventura County Landmarks and Points of Historical Interest as a historic district under Criterion 1 (events) and Criterion 5 (design).[5] The district is a contiguous historic landscape with several overlapping themes centered around citrus and other agricultural land uses. Rural historic landscapes are defined geographical areas that historically have been used by people, or shaped or modified by human activity, occupancy, or intervention. Rural historic landscapes must also possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features (McClelland et al. 1999:1-2).

The SCVRHD was first comprehensively evaluated in 1996 by San Buenaventura Research Associates and it was determined by Ventura County that the district represents one of the best remaining examples of a Southern California rural agricultural landscape. The district is eligible for the NRHP under Criterion C and the CRHR under Criterion 3 (design) as one of the best preserved examples of a mature Southern California citriculture landscape. The historic district is eligible for listing on the NRHP under Criterion A, and the CRHR under Criterion 1 for its reflection of the growth and development of agriculture.

The first step to documenting a historical rural landscape is developing a thematic historic context based on common themes and periods of time in a geographical area (Melnick 1984:34). This thematic historic context expanded on the work completed during the initial survey of the Western Santa Clara Valley in 1996. The historic themes identified in 1996 included agriculture, irrigation, transportation, and the petroleum industry (Triem and Stone 1996:1-8). The Cultural Resources analysis in the PSA expands on these themes through new research using both primary and secondary sources available from local, regional, and state-wide repositories. This research has led to a further refinement of the existing thematic context established in 1996.

The district possesses a significant concentration of buildings, structures, objects, and sites and vegetation. The district is important as a representation of the human designed landscape of agriculture; including spaces and spatial arrangement of buildings, structures, sites, and objects, and vegetation. These physical elements, taken together, contribute to the interpretation of citriculture in California, and include a wide variety of architectural styles, building types, and other features from the period of significance. These diverse resources serve to illustrate the development of agriculture from the smallest family farms to the largest agribusiness enterprises.

[5] The Ventura County Landmarks and Points of Historical Interest database mirrors the CRHR and NRHP significance criteria, but separates the typical four categories into eight local criteria.

Boundaries

Boundaries for a rural historic landscape must encompass the area having historic significance and contain contributing resources that express the characteristics of the historic landscape and that express the purposes for which it is significant (McClelland 1999:24-25. **Cultural Resources Figure 7** presents the SCVRHD landscape boundaries, which are summarized in the original district record as, “generally bounded on the south by the Santa Clara River, on the north by the Sulphur Mountain foothills, on the east by Peck Road and on the west by Wells Road. Also included are Aliso Canyon, Wheeler Canyon, O’Hara Canyon and Adams Canyon” (Triem and Stone 1996: District Record).

Contributing Resource Types

The SCVRHD includes a concentration of buildings, structures, and sites related to the history of agriculture in Southern California. The SCVRHD is comprised of resources identified in the 1996 San Buena Ventura Research Associates survey (1996 survey), and were identified during survey work performed during 2015-2017 for Mission Rock. The 1996 survey divided the landscape into several subdistricts. Subdistricts identified were based on historical land division in the valley. Examples include Limoneira Ranch Subdsitrict, Orchard Farm Subdistrict, and Beckwith Ranch Subdistrict (Triem and Stone 1996: Appendix F). Through additional research and fieldwork staff has identified several additional subdistricts described in greater detail below.

Buildings

Residential buildings represent the diversity of people who shaped the landscape, including affluent farmers from around the country, modest pioneers, and immigrant laborers. Ranch houses are the principal residential dwellings in the Santa Clara River Valley and were largely constructed by the landowners. The construction of residences reflects the family-owned character of large portions of the valley agricultural operations. The size, quality, style, and construction method of main residences vary widely. Some early homes were later superseded by more expensive, elaborate residences as the region benefited from the mature citrus and oil industries. As the children of ranching families reached adulthood, aging parents often subdivided holdings and new residences were constructed in architectural styles suited to that era. The siting of individual buildings was affected by a variety of factors, including natural features, the transportation network, the size and shape of individual parcels, crop types, and the building and farming traditions brought by settlers from elsewhere.

Labor housing is present on both family farms and large agribusiness ranches.[6] A wide variety of ethnicities provided farm labor that was both seasonal and year-round. Bunkhouses were constructed to house single men, while labor camps provided family housing. Individual detached dwellings provided housing for ranch foremen and supervisors.

[6] While the term “ranch” typically refers to activities associated with cattle or raising of other domesticated livestock. Southern California citrus growers were typically referred to by industry publications and within industry cooperatives as “citrus ranchers” and individual land holdings were called “citrus ranches.” For this reason, staff uses these terms to refer to citrus growers and their property.

Packing houses became an essential feature of the citrus landscape in Southern California. Only the largest citrus ranches maintained private packinghouses on their own land, while small operations depended on the cooperative packing houses within Santa Paula and Saticoy. Packing house design reflected the specific procedures for preparing oranges, lemons, avocados, and walnuts for markets which became more scientific as the industry matured.

Certain purpose-built outbuildings contribute to the district's significant historical themes. Processing buildings, such as walnut dehydrators are reminders of the important role this crop played in the development of the Santa Clara River Valley. Box sheds and barns were built for equipment and vehicle storage.

Rural schools were built for children of the farm owners and the Mexican laborer population. The Briggs School District served the valley's affluent farm children, while the smaller Eliseo School District was formed in Wheeler Canyon to house the laborer population.

Cultural Resources Table 3
SCVRHD: Previously Recorded Historical Buildings and Clusters[7]

Resource Identifier	Site Component(s)	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to Mission Rock Site
P-56-152520	Pardee Ranch	July 1996	Eligible	~1.9 mi northwest
P-56-152521	Hubert Edwards Residence	July 1996	Eligible	~1.8 mi northwest
P-56-152522	Milton Teague Ranch Main Residence & Guesthouse & Employee Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152534	Fred Outland Residence	July 1996	Eligible	~1 mi northeast
P-56-152553	Betram Lee Hawley Residence	July 1996	Eligible	~2.4 mi northwest
P-56-152554	Tom Parker Ranch Main Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152555	Tom Parker Ranch - House	July 1996	Eligible	~2.3 mi northwest
P-56-152556	Tom Parker Ranch Employee Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152557	Lee Carrol Hawley Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152558	Sharp-Thille Ranch (Main Residence)	July 1996	Eligible	~ 2.0 mi northwest
P-56-1525559	Sharp-Thille Rancho Office and Residence & Quonset Hut Office	July 1996	Eligible	~2.1 mi northwest
P-56-152560	Sharp-Thille Employee Housing	July 1996	Eligible	~2.1 mi northwest
P-56-152561	Sharp-Thille Employee Housing	July 1996	Eligible	~2.1 mi northwest
P-56-152562	Steele Ranch	July 1996	Eligible	~2.1 mi northwest

[7] The resources in Table 3 were documented in the July 1996 survey commissioned by Ventura County. Newly recorded resources, documented as part of the proposed Mission Rock project are discussed below.

Resource Identifier	Site Component(s)	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to Mission Rock Site
P-56-152563	Thomas W. Harwood Residence	July 1996	Eligible	~2.0 mi northwest
P-56-152595	Beckwith Ranch	July 1996, Updated 3/11/1999	Eligible	~0.5 mi northwest
P-56-152635	Edwards Ranch/Orchard Farm District	July 1996	Eligible	~1.3 mi west
P-56-152636	Edwards Adobe (More Adobe)	July 1996	Eligible	~1.3 mi west
P-56-152637	Row of Connected Buildings, School	July 1996	Eligible	~1.3 mi west
P-56-152638	Office	July 1996	Eligible	~1.3 mi west
P-56-152639	Residence #7	July 1996	Eligible	~1.3 mi west
P-56-152640	Residence #8	July 1996	Eligible	~1.3 mi west
P-56-152641	Residence #9	July 1996	Eligible	~1.3 mi west
P-56-152642	Residence #10	July 1996	Eligible	~1.3 mi west
P-56-152643	Barn	July 1996	Eligible	~1.3 mi west
P-56-152644	Barns (On Edwards Ranch)	July 1996	Eligible	~1.3 mi west
P-56-152645	Implement Shed	July 1996	Eligible	~1.3 mi west
P-56-152647	Barn (On Edwards Ranch)	July 1996	Eligible	~1.3 mi west
P-56-152648	Employee Residence and Barn (On Edwards Ranch)	July 1996	Eligible	~1.0 mi west
P-56-152649	Roger G. Edwards Residence (On Edwards Ranch)	July 1996	Eligible	~0.8 mi west
P-56-152653	Limoneira Ranch	July 1996, Updated 5/8/1997	Eligible	~1.85 mi north
P-56-152695	Aliso Village – Camp 800 (Limoneira Ranch)	July 1996	Eligible	~2.2 mi north, northwest
P-56-152698	Harwood Ranch (Limoneira Ranch)	July 1996	Eligible	~2.0 mi northwest

More Adobe/Edwards Ranch/Orchard Farm Subdistirct

According to the 1996 district record, the Orchard Farm Subdistrict is comprised of 1,023 acres bounded roughly by Telegraph Road on the north, the Santa Clara River on the south, Ellsworth Barranca on the west and Todd Barranca on the east (Triem and Stone 1996, district record). The subdistrict contains the Edwards Ranch farm cluster, which includes the More Adobe, a row of five connected buildings (including a one-room school house), an office building, five residences and associated out buildings, and three large barns. The subdistrict also includes the Roger Edwards' main residence, employee residence, and barn. Nearly all of Orchard Farm overlaps with the architectural PAA for the proposed Mission Rock project. The applicant's consultants recorded 45 resources that contribute to the SCVRHD on the portion of Orchard Farm that overlaps with the Mission Rock PAA.

Orchard Farm consists of 1,023 acres that was originally part of the Rancho Santa Paula y Saticoy. In the late 1850s, Thomas More purchased the land and commissioned a Monterey-style adobe residence to serve as headquarters of his cattle ranching operation.

The More Adobe is the oldest building in the SCVRHD and maintains a unique significance as the site of the original commercial fruit orchard, making the More Adobe and the Edwards Ranch Farm cluster extremely important to understanding the origins and development of agriculture in the Santa Clara Valley and to the significance of the SCVRHD. The More Adobe has been allowed to deteriorate and today is in poor condition. The applicant concluded that given the building's originating significance, the More Adobe remains a significant component of the Edwards Ranch and the SCVRHD (McCarthy-Reid et al. 2017:district record). The Orchard Farm Subdistrict, and all 45 resources are contributors to the locally listed SCVRHD. The Subdistrict is also individually eligible for listing on the CRHR under criteria 1 and 2; and individually eligible for listing on the NRHP under criteria A and B at the state level of significance. Despite minor modern intrusions into the subdistrict such as small satellite dishes on some houses and outdoor lighting, this resource retains a high degree of all 7 aspects of integrity of location, design, setting, feeling, materials, workmanship, and association. Several individual buildings (More Adobe and Edwards Main Residence) have suffered a relative loss of workmanship and materials due to neglect or alterations; however, overall these resources continue to retain sufficient historic integrity of location, design, setting, feeling, and association to convey their significance.

Sharp-Thille Subdistrict

The Sharp-Thille Subdistrict is located between Telegraph and Darling roads and between the last remaining segment of Farmers Ditch in the west, and Ellsworth Barranca to the east. The property is comprised of an elaborate main residence, built in the Italianate architectural style, and includes a tall viewing tower. Four bungalow style workers cottages are located along Ellsworth Barranca and face toward the main residence. There are several purpose-built outbuildings near the main residence and workers cottages, including one large barn/packing house. A few hundred yards to the west, along Telegraph Road, a one-story pyramidal folk house serves as the company manager's residence and office. A Quonset hut that once housed farm equipment has been converted to an office.

The subdistrict is significant for its association with one of the leading pioneer families in the Santa Clara Valley. Specifically, James M. Sharp purchased 150 acres in 1882 and constructed the main residence in 1890. James Sharp served as president of several organizations including the Saticoy Walnut Growers, Alta Mutual Water Company, the Saticoy Water Company, and the Farmers and Merchants Bank of Santa Paula. The applicant surveyed the property in 2016 and documented 58 resources that contribute to the SCVRHD within the context of the J.M. Sharp Company. The main residence is listed as county landmark number 114, and the farm cluster was evaluated in 1996 and determined eligible for listing on the CRHR under criteria 1 and 3 and the NRHP under criteria A and C. The subdistrict and its contributing resources are historical resources for the purposes of CEQA. Despite minor modern intrusions into the subdistrict such as a basketball hoop and trampoline, this resource retains a high degree of all 7 aspects of integrity of location, design, setting, feeling, materials, workmanship, and association.

Limoneira Ranch Subdistrict

According to the 1996 district record, the Limoneira ranch is a “visually coherent district comprised of approximately 1,600 acres of citrus and avocado orchards divided by windrows of eucalyptus and popular trees and natural barrancas” (Triem and Stone 1996, district record). A portion of the Limoneira Ranch Subdistrict overlaps with a portion of the PAA near Foothill Road. This portion of the subdistrict, Olivelands, was annexed by the company in 1911. The applicant recorded 59 resources that contribute to the SCVRHD on the portion of Limoneira Ranch that overlaps with the Mission Rock PAA.

The Limoneira Ranch Subdistrict is significant for the major role it has played in the development of citrus in the Santa Clara Valley, but also in development of the citrus industry in California and nationwide. The company’s historic significance is directly linked to ranch manager Charles C. Teague. Teague managed Limoneira for over fifty years and served as president of the California Fruit Grower’s Exchange (later known as Sunkist) from 1920 to 1944 and the Ventura County Fruit Growers exchange from 1901 to 1944. Teague’s reign as manager of Limoneira and president of several powerful grower cooperatives overlaps with the high-point of the California citrus industry. For these reasons the 1996 district record determined that along with being a contributor to the locally listed SCVRHD, the district was also individually eligible for listing on the CRHR under criteria 1, 2, and 3; and individually eligible for listing on the NRHP under criteria A, B, and C at the national level of significance. Despite minor modern intrusions into the subdistrict such as a modern packing house in the subdistrict, a basketball court and park, this resource retains a high degree of all 7 aspects of integrity of location, design, setting, feeling, materials, workmanship, and association. The Limoneira Ranch Subdistrict is considered a historical resource for the purposes of CEQA.

Cultural Resources Figure 8 displays these three subdistricts in relation to the PAA and the proposed project.

Newly Recorded Historic Age Structures within the PAA and One Mile Literature Search Area

The applicant discussed 29 newly identified built environment resources within the PAA greater than 45-years old. Of these newly identified resources 12 were inaccessible at the time of the 2015 survey. These resources continued to be inaccessible following several attempts by the applicant to request survey access (McCarthy-Reid et al. 2017). These inaccessible resources are discussed below. Staff identified two additional historic districts that merit consideration as historical resources, the Saticoy Oil Field Subdistrict, and the Limoneira Worker Housing Camps Subdistrict.

Inaccessible Resources

With the exception of the Williams Canyon buildings (discussed below), none of these resources were identified as contributors to the SCVRHD during the 1996 survey work. The majority of the 12 inaccessible resources are located near the project site, in an area developed by modern industrial facilities. Despite being denied access by property

owners, surveyors supplemented their analysis by examining aerial photographs and historical maps to conclude these resources do not meet the criteria for listing on the CRHR under any of the four criteria. Staff agrees with this conclusion.

730 Mission Rock Road

This resource is located on Mission Rock Road, approximately 0.5 miles from the Mission Rock project site. The building appears to have been constructed to serve as an office for the associated maintenance yard on the property. There are several garages and other structures to the rear of the lot. The resource itself exhibits elements of the California Ranch architectural style, including a low pitched cross gabled roof, board-and-batten siding and metal sliding windows. This resource was originally recorded by the applicant in October 2015. The results of the applicant's fieldwork were included in the AFC and the resource site record included a confidential technical appendix. The parcel was developed sometime in the late 1960s according to the assessor's parcel date and review of aerial photographs. Based on the applicant's historical research and field survey of the property, 730 Mission Rock Road and the associated accessory structures do not appear to be associated with the historical themes identified as significant to the SCVRHD. The applicant's research has yielded no information indicating an association with 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) (Lawson et al. 2015:40). The resources do not appear to qualify as a historical resource for the purposes of CEQA or meet the criteria for inclusion in the CRHR.

890 Mission Rock Road

This resource is located on the project laydown area, directly north of the project site. The resource is a wood frame commercial building with metal cladding and roof. There is a low fieldstone rock wall and entry stair leading to the primary entryway. The building was first recorded in October 2015 as part of the fieldwork completed for the AFC. The applicant recommended the resource was likely eligible for listing on the CRHR, presumably under criteria 1, for its role as the Shell Oil Company Saticoy Field Office. The resource was subsequently documented by the applicant and included as a contributing resource to the SCVRHD as part of a subdistrict of petroleum features on the southern half of the district associated with oil exploration in the Santa Clara Valley. 890 Mission Rock Road retains a high degree of historic integrity of location, design, materials, workmanship, and feeling. The historic integrity of setting and association has been impacted over time by industrial development on the south side of Mission Rock Road and construction of the County Jail, separating the Saticoy Field Office from its association with the Shell Oil Field wells to the west. The resource retains sufficient integrity to be considered a contributing resource to the district under Criterion 1 of the CRHR. The resource is considered a historical resource for the purposes of CEQA, and is eligible for listing on the CRHR.

936 Mission Rock Road

This resource is located 0.25 miles east of the proposed project site along Mission Rock Road in an industrial area of Ventura County. The industrial building is metal clad with a metal roof and metal window screens. Aerial photographs indicate the building was constructed between 1967 and 1969. This resource was originally recorded by the applicant in October 2015. The results of the applicant's fieldwork were included in the AFC and the resource site record was included within the confidential technical appendix. The applicant's research has yielded no information indicating an association with 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) (Lawson et al. 2015, 39). Based on the applicant's historical research and field survey of the property, 936 Mission Rock Road does not appear to qualify as a historical resource for the purposes of CEQA or meet the criteria for inclusion in the CRHR.

11431 Foothill Road

This resource is located 0.8 miles from the Mission Rock generator tie-line pole number 18 along Foothill Road. The residential building is a cross gabled Ranch Style single family house with board-and-batten siding. The building first appears on 1967 aerial photographs. This resource was originally recorded by the applicant in October 2015. The results of the applicant's fieldwork were included in the AFC and the resource site record was included in the confidential technical appendix. The applicant's research has yielded no information indicating an association with 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) (Lawson et al. 2015: 40). Based on the applicant's historical research and field survey of the property, 11431 Foothill Road does not appear to qualify as a historical resource for the purposes of CEQA or meet the criteria for inclusion in the CRHR.

12025 Foothill Road

This resource is located adjacent to the Mission Rock generator tie-line, between pole numbers 18 and 19. The residential building appears to be a Spanish Eclectic style residence that first appears on aerial photographs in 1978. This resource was originally recorded by the applicant in October 2015. The results of the applicant's fieldwork were included in the AFC and the resource site record was included in the confidential technical appendix. The applicant's research has yielded no information indicating an association with 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) (Lawson et al. 2015: 40). Based on the applicant's historical research and field survey of the property, 12025 Foothill Road does not appear to qualify as a historical resource for the purposes of CEQA or meet the criteria for inclusion in the CRHR.

Edwards Ranch Drainage Canal

This resource extends from Santa Paula Street, south through Edwards Ranch-Orchard Farm, to the Santa Clara River. The canal is ten feet wide at the top and five feet wide at the bottom and the majority is unimproved, while the southern-most portion is lined with concrete. Based on aerial photographs it appears the canal was lined with concrete in the late 1960s. However, the majority of the canal appears to date from much earlier. This resource was originally recorded by the applicant in October 2015. The results of the applicant's fieldwork were included in the AFC and the resource site record is included in the confidential technical appendix. The applicant notes the resource appears on 1967 aerial photographs; however this reference appears to only address the concrete lining. The canal is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (CRHR Criteria 1) as a contributor to the SCVRHD. Based on the applicant's research the resource does not appear to be associated with the lives of persons significant in our past (Criterion 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) (Lawson et al. 2015: 40). The canal retains a fair degree of historic integrity of location, design, setting, workmanship, feeling, and association. Lining of a portion of the canal on Orchard Farm has somewhat impacted the feature's integrity of materials; however the majority of the feature retains the original earthen lining. Since the canal was likely constructed by the Limoneira Company for agricultural operations on Orchard Farm, the resource appears to be a contributing feature of the SCVRHD, making it a historical resource for the purposes of CEQA.

Ellsworth Barranca Pump House

This resource is located on the north side of Telegraph Road, where Telegraph crosses the Ellsworth Barranca. This location coincides with the proposed site for Mission Rock generator tie line pole number 16. The pump house is wood framed and clad entirely in corrugated metal with a gable roof. The structure was originally recorded by the applicant in October 2015. The results of the applicant's fieldwork were included in the AFC and the resource site record was included in the confidential technical appendix. The applicant notes the resource appears on 1947 aerial photographs, indicating the structure falls within the period of significance of the SCVRHD. The pump house is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (CRHR Criteria 1) as a contributor to the SCVRHD. Based on the applicant's research the resource does not appear to be associated with the lives of persons significant in our past (Criterion 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) (Lawson et al. 2015: 40). The pump house retains a high degree of historic integrity of location, design, setting, materials, workmanship, feeling, and association. The pump house was likely constructed for agricultural operations on the adjacent parcel, and appears to be a contributing feature of the SCVRHD, making it a historical resource for the purposes of CEQA. The applicant's consultant agreed with staff's recommendation that the resource is likely eligible for listing in the CRHR in the response to Data Request Number 115.

Williams Canyon Subdistrict

Williams Canyon Subdistrict is a collection of residential houses and associated outbuildings in the center of Williams Canyon. The construction date for this subdistrict is unknown but it appears on an early set of aerials (1928), implying the farm cluster dates to the earliest agricultural development in the valley (1887-1910). The subdistrict was inaccessible during the October 2015 survey but was viewed by the applicant from a distance. Staff also viewed the cluster from a distance in June 2016. The canyon itself is filled with mature citrus groves and designed eucalyptus tree rows. The applicant's conclusions are documented on site record forms included in the confidential technical appendix submitted with the AFC. The applicant noted the residence associated with the subdistrict was construed in 1927 according to a personal communication with the owner, Scott Walker. Specifically, the subdistrict appears to be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (CRHR Criteria 1) as a contributor to the SCVRHD.

Based on the applicant's research the resource does not appear to be associated with the lives of persons significant in our past (Criterion 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) (CALPINE 2015, 40). The subdistrict appears to retain a high degree of historic integrity of location, design, setting, materials, workmanship, feeling, and association. Although inaccessible at the time of survey, the applicant's consultant agreed it is likely the Williams Canyon subdistrict is a contributing resource to the SCVRHD. The resources in the subdistrict appear to be a contributing feature of the SCVRHD, making the district a historical resource for the purposes of CEQA.

Saticoy Oil Fields Subdistrict

This subdistrict is located on Orchard Farm between the Todd and Elsworth barrancas. The subdistrict includes pipelines, fountain heads, gathering lines, trunk lines and natural gas lines. These systems are connected to tanks and a tank farm located on Mission Rock Road. The Saticoy Field Office located at 890 Mission Rock Road was recorded by the applicant in October 2015, and appears to be a contributing resource to the Shell Oil Fields Subdistrict as part of Shell Oil Company Saticoy Oil Field operations.

The Saticoy Oil Field on Orchard Farm exists within the broader historical context of petroleum exploration and development in Ventura County, and Santa Paula in particular. Historian Michael Belknap noted that by 1875, "Santa Paula was considered the hub of the Ventura County petroleum industry. [And by 1890 was] the recognized center of the California Oil industry" (Belknap 1968:119). The delayed development of the Shell Saticoy Oil Field is directly linked to agriculture through George Briggs, as well as the historical connection of agriculture and petroleum industries in the valley.

Petroleum development was identified within the thematic historic context of the 1996 SCRVHD survey, but not expanded in great detail.

The applicant conducted an inventory of the features in the subdistrict, which is included in the response to Data Request Number 115. While the Saticoy Oil Field Subdistrict is not directly linked to the citrus industry, these elements represent a change to the district that has gained significance in its own right. The subdistrict appears eligible for listing on the NRHP under criteria A, and the CRHR under criteria 1 at the local level of significance as a contributor to the SCVRHD. The applicant's consultant disagrees that the subdistrict is a change to the SCVRHD that has gained local significance in its own right. Few modern intrusions impact this subdistrict and this resource retains a high degree of all seven aspects of integrity: location, design, setting, feeling, materials, workmanship, and association. Staff considers the Saticoy Oil Field subdistrict a historical resource for the purposes of CEQA.

Southern Pacific Railroad Tracks & Bridges at Todd and Ellsworth Barrancas

This segment of the Southern Pacific Railroad, known as the Santa Paula Branch Line, is a linear resource that passes through the Orchard Farm Subdistrict. The line is standard gauge originally constructed in 1887. In 1978 a storm caused severe damage to the line and rail service was stopped. By the early 1990s Southern Pacific sought to abandon the remainder of the branch line, triggering interest by local jurisdictions to preserve segments of the line for future rail use or as a recreational trail.

This segment of track was first identified in 1996 as a contributing resource to the SCVRHD (Triem and Stone 1996: district record). The applicant evaluated this segment of track as an individual NRHP or CRHR resource in October of 2015 and found the resource did not merit consideration on its own. In response to Data Request 115, the applicant reevaluated the resource in January 2017 and agreed with the 1996 assessment that the resource was eligible for listing on the NRHP and the CRHR as a contributing element of the SCVRHD. These resources retain a high degree of integrity of location, design, setting, feeling, and association. These resources are historical resources for the purposes of CEQA.

Irrigation Systems

Three water diversion systems were identified by the applicant during subsequent survey work for Mission Rock: the Olivelands system, the Sharp system, and the Orchard farm system. In response to staff's Data Request 115, the applicant recorded visible features of these systems but lacked sufficient background information to know exactly how the systems operate below grade. These systems are comprised of flood and furrow type irrigation features and appear to still be intact and serving an original function, although augmented by modern drip-type systems.

The applicant's consultant concluded these systems are likely not eligible on their own merits, but are related to the development of orchard farming in the SCVRHD and contribute to the district. While these systems may not have been unique examples for their time, the decline of the citrus industry in Southern California has led to the removal of most intact systems. Therefore, to have three operating systems within the same district provides substantial justification for the district's high degree of historic integrity. Staff agrees with the applicant that the irrigation systems on the Olivelands Subdistirct,

the Sharp-Thille Subdistrict, and the Orchard Farm Subdistrict are excellent examples of flood and furrow irrigation systems from the first half of the 20th century. These systems are contributing resources to the locally listed SCVRHD, and eligible for listing on the CRHR under criteria 1 and 3, and listing on the NRHP under criteria A and C making these systems historical resources for the purposes of CEQA. The applicant's consultant agreed with this determination.

Tree rows

Tree rows of large, fast-growing blue gum eucalyptus and poplar trees were used to protect crops from coastal breezes and seasonal Santa Ana wind gusts throughout the citrus region. In the SCVRHD, these tree rows were used both to define property boundaries, protect crops from wind, and reduce wind erosion to croplands. The system of tree rows appear eligible for listing on the NRHP under criteria A, B, and D, and the CRHR under criteria 1, 3, and 4 at the regional level of significance, as a contributor to the SCVRHD. The tree rows retain a high degree of integrity of location, design, setting, feeling, and association. The tree rows in the PAA are historical resources for the purposes of CEQA. It is unclear how the applicant's consultants view these resources because no analysis was provided, despite several attempts by staff to clarify the applicant's position (Issues Resolution Workshop: September 23, 2016).

Workers Housing Camps Subdistrict

The network of workers housing camps built by Limoneira between 1911 and 1916 include two contributing resources within the PAA, Camp 800 and Camp 900. The other seven camps are located outside the PAA and potential impacts were not analyzed in great detail because of their distance from the proposed project. These nine camps are currently in various stages of evolution from completely demolished and replanted with orchards (Camp 900 & 700) to rebuilt modern communities intertwined with historic housing (Camp 800). While two of the housing camps exist within the PAA, others are located along Todd Barranca (Camp 100) or in Wheeler Canyon (Camp 200-600). This network of sites includes both built environment and archeological resources and represents an important chapter in the history of agriculture in the Santa Clara Valley by providing important context about the immigrant experience in the United States. This subdistrict is recommended eligible for listing on the NRHP under criteria A, B, and D, and the CRHR under criteria 1, 3, and 4 at the national level of significance, both individually and as a contributor to the SCVRHD. The individual camps have varying degrees of historic integrity, but the subdistrict as a whole retains a high degree of integrity of location, design, setting, feeling, materials, and association. The workers housing camps are therefore historical resources for the purposes of CEQA. The applicant may recognize the historical significance of these resources based on their evaluation of Camp 800 as an eligible historical resource (McCarthy-Reid et al. 2017:34); however, there is no mention of the subdistrict or the remains of The Flats//El Arco/Camp 900 site in their analysis.

Interpretation of Results

Model of Prehistoric and Historic Archaeological Resources

The applicant's AFC and their associated cultural resources documentation suggest that portions of the PAA have a low potential to contain prehistoric and historic archaeological resources on the ground surface because of pavement or disturbance from agricultural activities. In other portions of the PAA, in particular in the Sulphur Mountain foothills, the ground surface is more visible but the high degree of slope reduces the potential for surface manifestations of archaeological resources. These expectations were borne out by the cultural resources inventory described in this document, i.e., no surface archaeological sites were recorded by the applicant.

The applicant's AFC and their associated cultural resource documentation states that buried archaeological resource potential is high based on the geomorphological character of those portions of the PAA near the Santa Clara River. As the generator tie-lie extends north the potential for large prehistoric habitation sites decreases, but there remains a high potential for encountering other prehistoric resource types as well as historic archaeological resources throughout the PAA.

DIRECT/INDIRECT IMPACTS AND MITIGATION

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

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

Ground disturbance accompanying construction has the potential to directly affect as-yet, unknown, buried archaeological resources, the significance of which remains unknown. 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 depending on the location of the component, the depth of excavation, the geomorphological character of the soils being excavated, and previous disturbances of the area.

Construction Impacts and Mitigation

Assessment of Direct Impacts on Prehistoric and Historic Archaeological Resources and Proposed Mitigation

As proposed, Mission Rock could have a significant impact on one known significant historical resource, DS-S-01, an archeological site. With the adoption and implementation of **CUL-15**, staff concludes that Mission Rock would avoid impacts to this site.

The proposed project could impact buried, as-yet, unknown prehistoric or historic archaeological resources. With the adoption and implementation of the proposed Conditions of Certification **CUL-1** through **CUL-8**, the project would not have a significant impact on potentially significant prehistoric and historic archaeological resources that may be discovered during construction. Staff recommends that the Energy Commission adopt Conditions of Certification **CUL-1** through **CUL-8**. These conditions are intended to facilitate the identification and assessment of previously unknown prehistoric and historic archaeological resources encountered during construction and to mitigate any significant project impacts on any newly found resources assessed as significant and on any known resources that may be affected by the project in an unanticipated manner. To accomplish this, the conditions provide for:

- Hiring a Cultural Resources Specialist, Cultural Resources Monitors, and Cultural Resources Technical Specialists;
- Pre-construction archaeological testing and potential geoarchaeological analysis of the natural gas pipeline and reclaimed water pipeline route(s), i.e., in the areas of high archaeological sensitivity for buried, as-yet, unknown archaeological resources;
- Archaeological and Native American monitoring of all ground-disturbing activities;
- Recovery of significant data from archaeological deposits discovered during construction;
- Writing a technical archaeological report on monitoring activities and findings;
- Curating any recovered artifacts and associated notes, records, and reports;
- Cultural resources surveys on private soil burrow/disposal sites, if the applicant chooses to use private soil borrow or disposal sites rather than a commercial sites; and
- Flagging and avoiding site DS-S-01 during installation of the generator tie-line pole.

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

Prehistoric and Historic Archaeological Resources on the Surface of the PAA

A total of four archaeological resources were recorded on the surface of the PAA. One of these sites, DS-S-01, could be impacted by construction of the proposed project. A mitigation measure to flag and avoid the site during construction of the generator tie-line pole will avoid impacting this site. The other three sites would not be impacted by construction of Mission Rock for the reasons provided below.

P-56-100223

This isolated artifact was not relocated by the applicant during their survey efforts. Its recorded position is outside the area of direct impact of the proposed project.

The Flats/El Arco/Camp 900

This site was located at the proposed site of one of the transmission line poles; however, in response to staff's Data Request 154-158 (CH2M2017d), the applicant moved the location of the pole outside the boundaries of the site. Therefore, the site would be avoided and would not be impacted by construction of the proposed project.

P-56-001051

This historic trash scatter was not within the archaeological survey area and was therefore not relocated by the applicant. The site would not be impacted because it is outside the area of direct impact of the proposed project.

DS-S-01

This CRHR-eligible historic trash scatter measures about 43,000 feet^2 and is about 77 feet south of a proposed generator tie-line pole at its closest point. Impacts to this site would be avoided through implementation of a flag and avoid mitigation (Condition of Certification **CUL-15**).

Buried Archaeological Resources in the PAA

No positive identification of buried prehistoric or historic archaeological resources has been made by staff or the applicant. The sediments under the proposed project site and associated linear alignments are of the right age to support the formation and preservation of archaeological resources throughout the span of human occupation in the Santa Paula area, and there is a high potential for encountering buried, as-yet, unknown archeological resources in the PAA. The proposed project could result in damage to buried, as-yet, unknown archaeological resources, if present. Buried resources can be significantly damaged during construction, even with archaeological monitoring because of the fast-paced nature of construction and large amount of earth-moving associated with construction. Due to the high potential for encountering buried archaeological resources in the PAA based on the geomorphology of the PAA, Native American consultation, and the prehistoric and ethnographic record, staff recommends that the project owner implement a pre-construction testing plan (Condition of Certification **CUL-6**) to identify any potential buried archaeological resources before starting trenching activities for the pipeline(s).

Staff concludes that expectable ground-disturbance impacts on buried, as-yet, unknown archaeological resources would best be minimized by implementing a pre-construction archaeological testing plan and accompanying geoarchaeological analysis, complemented by a robust and comprehensive cultural resources mitigation and monitoring plan for the proposed project. Implementation of a well-planned mitigation and monitoring program based on the results of a pre-construction archaeological testing and geoarchaeological analysis would reduce the potential project impacts to a less-than-significant level.

Assessment of Direct Impacts on Ethnographic Resources

Staff is currently in the process of consulting Native Americans to better understand the nature and extent of the traditional plant collecting area and the traditional cultural landscape resources. A full assessment of any direct impacts to these resources and any associated mitigation measures will be included with the Final Staff Assessment.

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

Staff has reviewed information submitted by the applicant, analyzed the literature search materials and other available studies as noted herein, engaged in independent research, and performed on-site and off-site reconnaissance surveys. Based on the information available, staff concludes that Mission Rock would have significant, direct and unavoidable impacts on SCVRHD contributing resources, to the SCVRHD as a whole, and cumulative impacts to historic built environment resources contributing to and associated with the SCVRHD. No other impacts to known built environment historical resources would occur as a result of the proposed project.

Staff concludes with the adoption and implementation of the proposed Conditions of Certification **CUL-1** through **CUL-15**, the project's significant impacts to built environment historical resources would be reduced to a less than significant level. Staff recommends that the Energy Commission adopt Conditions of Certification **CUL-1** through **CUL-15**. These conditions address known impacts to the SCRVHD contributing elements and are roughly proportionate to the project's impacts on built environment resources.

Staff must determine if Mission Rock would result in substantial adverse change to historical resources. Substantial adverse change to a historical resource pursuant to the California's Public Resources Code results from demolition, destruction, relocation, or alteration of a resource such that the significance of an historical resource would be impaired (Cal. Code Regs., tit. 14, § 5020.1(q)). While demolition of an individual building obviously meets the definition of substantial adverse change, staff must perform a more in-depth, step-by-step analysis when a project may result in substantial adverse change to contributing elements of a historical resource or to a resource's elements of historic integrity. The State Office of Historic Preservation has provided guidance to CEQA lead agencies which states that "a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e. character-defining features) can be considered a material impairment of the resource's significance" (OHP 2001: 6).

Potential impacts to the built environment are limited to the elements of the SCVRHD, therefore the discussion below focuses on potential impacts to the district and its contributing resources. Staff's analysis is divided into five sections to better understand potential impacts of the proposed project:

1. The proposed project's compliance with the Secretary of the Interior Standards for the Treatment of Historic Properties;

2. Impacts of the proposed project to the historic integrity of the SCRVHD and contributing resources;

3. Impacts of the proposed project to significant viewsheds of contributing elements of the SCVRHD;

4. Impacts to historic tree rows in the SCVRHD; and

5. Cumulative impacts of the proposed project to historical resources associated with the SCVRHD.

In considering impacts to rural historic landscapes, staff conducted comprehensive background research and an extensive literature review to determine what sort of changes might affect the SCVRHD. Publications and technical literature reviewed by staff included, *Cultural Landscapes: Rural Historic Districts in the National Park System* (Melnick 1984); *Preservation Brief 36: Protecting Cultural Landscapes Planning, Treatment and Management of Historic Landscapes* (Birnbaum 1994); *General Guidelines for Identifying and Evaluating Historic Landscapes* (Caltrans 1999)*; A Historical Context and Archaeological Research Design for Agricultural Properties in California* (Caltrans 2007); along with a large volume of guidance and grey literature pertaining to cultural landscapes which can be found in the References Cited section in this Preliminary Staff Assessment and the **Cultural Resources Appendix CR-1**.

Compliance with the Secretary of the Interior Standards for the Treatment of Historic Properties

A project that conforms with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (hereafter "Standards") is generally considered a project that will not cause a significant impact to historical resources (Birnbaum 1996. Cal. Code Regs., tit. 14, § 15126.4(b)(1)). Professionals can use the *Standards* to evaluate potential impacts and as a form of mitigation if a project as-proposed does not comply with the *Standards*.

Compliance with the *Standards* is largely dependent on whether the proposed Mission Rock facility and associated linear features, particularly the transmission line and monopoles will result in significant impacts to the SCVRHD's character defining features.

These features include the landscape's contributing elements as well as the spatial relationships among the contributing elements. The *Standards* and their associated guidelines, are incorporated into California Code of Regulations (tit. 14, § 15064.5 (b)(1) and § 15126.4(b)(1)) as a means for determining if a project is likely to impact a resource, and as a way to mitigate potential impacts to a less than significant level.

The *Standards* are used by federal, state, and local government agencies to promote responsible preservation practices that help protect irreplaceable cultural resources, such as the SCVRHD, from substantial adverse changes. The *Standards* are the most appropriate means for determining how a project may affect a resource. The *Standards* contain four treatment approaches: Preservation, Rehabilitation, Restoration, and Reconstruction. For the purposes of the SCVRHD, the most appropriate treatment approach is Preservation because it places a high premium on the retention of historic fabric through conservation, maintenance and repair. The Preservation treatment approach respects that resources change over time, but attempts to manage that change through thoughtful analysis of proposed alterations, like the Mission Rock facility and its associated linear features.

Birnbaum (1994:12) supports Preservation as a treatment standard for resources like the SCVRHD, in stating that the Preservation Treatment is appropriate for a rural landscape "with a high level of integrity and authenticity" because "such a treatment emphasizes protection, stabilization, cyclical maintenance, and repair of character-defining landscape features". If a project does not substantially comply with the *Standards,* it is likely the project will result in a substantial adverse change to the resource and a significant impact to the landscape as a whole, as well as potentially impacting individual character defining features of the landscape (Cal. Code Regs., tit. 14, § 15126.4(b)(1)).

Preservation Standard Number 1: Use

A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships (Birnbaum 1996)*.*

The Mission Rock site is located in a portion of the SCVRHD currently used for industrial purposes. The proposed site is used as a boat and recreational vehicle storage yard. Construction of the proposed Mission Rock electrical generation facility would not change the zoning of the project site, which changed from agricultural to industry in the 1940s. The project laydown area at 890 Mission Rock Road was originally an office for the Shell Oil Company Saticoy Oil Fields, a resource that staff considers a subdistrict of the SCVRHD. However, 890 Mission Rock Road is no longer used as the field office for the Shell Oil Company and therefore temporary use of the parcel as a laydown area for the proposed project would not result in a change of use that would affect the resource. Staff included workers awareness training of 890 Mission Rock Road within **CUL-5** to ensure use of the site as a laydown area would not inadvertently impact the resource. Construction of the proposed Mission Rock facility would conform to *Preservation Standard Number 1.*

The proposed project's linear facilities (transmission line, gas line, and water line) that cross Orchard Farm and follow north along Ellsworth Barranca would change the land-use of a portion of the SCVRHD temporarily during construction, and permanently during the operation and maintenance of the transmission line. The majority of the parcels would continue to be used as historically intended, primarily agriculture and petroleum extraction. However, staff considers the generator tie-line a new use of these parcels. Therefore, pursuant to *Standard Number 1*, staff must evaluate whether the new use as a generator tie-line corridor would maximize the distinctive materials, features, spaces, and spatial relationships that define the SCVRHD. The predominance of orchards, row crops, farm clusters, and windbreaks would be affected by the introduction of the transmission lines and monopoles, which would be constructed of modern materials. The transmission line and monopoles would also introduce features to the landscape that never existed historically and create artificial spaces (division) between historical farm clusters and subdistricts which are out of scale to the vertical spatial relationships of the otherwise flat landscape. Therefore, introduction of the generator tie-line, associated right-of-way, and access roads through the district does not comply with *Preservation Standard Number 1* pertaining to the new use of the rural historic district as a generator tie-line corridor.

Preservation Standard Number 2: Character

The historic character of a property will be retained and preserved. The replacement of intact or repairable historic material or alteration of features, spaces and spatial relationships that characterize a property will be avoided (Birnbaum 1996)*.*

The Mission Rock electric generation facility would be located in an area of the SCVRHD that is no longer used for agriculture, and no longer contains distinguishing qualities or characteristics that contribute to the significance of the SCVRHD. Therefore, construction of the Mission Rock facility would not affect qualities or characteristics that contribute to the landscape.

Along the generator tie-line and the natural gas line as proposed by the applicant (Option A and Option B), irrigation structures and features are likely to be damaged or destroyed as a result of pole installation, equipment laydown, and construction or reuse of preexisting access roads for maintenance or pull locations required during construction. The removal of vegetation and destruction of irrigation features or crops would not retain and preserve historic features that help define the citriculture landscape. This loss of historic features does not retain and preserve the historic character of the property. Impacts to viewsheds from individual contributing resources on the More-Edwards Adobe farm cluster and the Sharp-Thille farm cluster would impact the significant spaces and special relationships that characterize those properties and ultimately alter the character of these resources. Viewsheds are discussed in greater detail below under the "Potential Impacts to the SCVRHD Significant Viewsheds" subsection below. Similar to *Preservation Standard Number 1,* staff must also consider the effect of the generator tie-line corridor on the character of the district, particularly the alteration of features, spaces and spatial relationships that characterize the SCVRHD.

The character of the district's orchards, row crops, farm clusters, windbreaks, and field patterns would be affected by the introduction of the transmission lines and monopoles. The project as-proposed would introduce features to the landscape that never existed historically, and would create artificial spaces (division) between historical farm clusters and subdistricts. These features are out of scale to the vertical spatial relationships of the otherwise flat landscape. Introduction of the generator tie-line does not comply with *Preservation Standard Number 2* pertaining to the character of the district and its subdistricts.

Preservation Standard Number 3: Materials

Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research (Birnbaum 1996)*.*

The Mission Rock site is located in an area of the SCVRHD that no longer continues to be used for agriculture, and no longer contains historic materials and features that contribute to the significance of the SCVRHD. Therefore, construction of the Mission Rock electric generation facility would not destroy existing historic materials and features that help define the landscape.

The historic blue gum eucalyptus trees, Poplar trees, and citrus orchards in the district are character defining features of the SCVRHD, and were incorporated into in the Ventura County local register when the 1996 district record was adopted by the Ventura County Board of Supervisors. One intact tree row would be segmented with a 40-foot wide right-of-way where the generator tie-line exits the Mission Rock facility site. Pursuant to the response from the applicant to Data Request No. 124, a vegetation management plan of tree trimming or removal at several points on the generator tie-line right-of-way would occur during operation. The applicant acknowledged the vegetation management plan is likely to require alteration of eucalyptus trees along the generator tie-line, affecting the *existing* historic materials and features of the rural landscape.

In the Orchard Farm Subdistrict and along Ellsworth Barranca, the project's generator tie-line construction and maintenance has the potential to significantly alter citrus orchards and other agriculture features, including two of the three historic irrigation systems. Impacts are particularly likely around the foundation of each monopole. Eucalyptus tree alteration and other impacts to agricultural features, taken together, would destroy materials that are a physical record of the district's time, place, and use.

Removal of historic material to install and maintain the transmission lines and monopoles through the center of the historic landscape, would affect the rural landscape's record of time, place and use; therefore, the project does not substantially comply with *Standard Number 3*.

Preservation Standard Number 4: Changes

Changes to a property that have acquired historic significance in their own right will be retained and preserved (Birnbaum 1996).

The Mission Rock electric generation facility site is located in an area of the SCVRHD that no longer continues to be used for agriculture. The proposed site is used for boat and recreational vehicle storage, a change in character and use that is less than 50 years old and has not gained significance in its own right. Therefore, construction of the Mission Rock facility would not affect changes to the historic landscape that have gained significance overtime.

Construction of the Mission Rock linear features would not impact any changes to the district that have gained significance in their own right. The introduction of State Highway 126 in the late 1960s bisected the district through the former Rancho Santa Paula y Saticoy. While important, this change did not significantly change the agriculture or petroleum industries in Santa Clara Valley. Moreover, by the late 1960s the citrus industry in Southern California was already in decline.

The Saticoy Oil Fields fall within the district's period of significance, and the petroleum industry is identified as a significant theme within the historic context sections of the 1996 survey report and district record (Triem and Stone 1996: district record). Given the importance of petroleum in Ventura County and the City of Santa Paula these petroleum wells (since converted to natural gas), pipelines, valves and other features located between the Santa Clara River and the Southern Pacific Railroad tracks represent a significant historical subdistrict that contributes to the important themes identified in the thematic historic context for the SCRVHD. The subdistrict of petroleum features would be affected by the introduction of the generator tie-line. However, since the petroleum features are industrial in nature, the introduction of a series of monopoles is not likely to impact the resource such that its significance would be impaired. The subdistrict itself would be retained and preserved while introducing a new feature similar in composition to the subdistrict. Therefore, the project complies with *Standard Number 4* regarding preserving changes to the district that have gained significance in their own right.

Preservation Standard Number 5: Construction Methods

Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved (Birnbaum 1996).
The Mission Rock electric generation facility site is located in an area of the SCVRHD that is no longer used for agriculture. The proposed site is used for boat and recreational vehicle storage, and does not contain distinctive materials, features, finishes and construction techniques or other characteristics that help define the SCVRHD. Therefore, construction of the Mission Rock facility would not impact distinctive materials, features, finishes, or construction techniques that characterize the historic landscape.

Construction of the Mission Rock linear features would not demolish or destroy buildings or structures that contain distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize the historic district. Introduction of the generator tie-line around Orchard Farm, the Sharp-Thille Farm, and crossing historic roadways at Telegraph and Foothill roads would alter viewsheds that are considered distinctive features of these resources. Moreover, pursuant to information provided by the applicant, at several locations along the transmission line, historic eucalyptus trees would be removed or significantly altered as a result of construction and operation of the proposed generator tie-line. The removal or alteration of historic trees at pole number one, and potentially between poles 16-19 and poles 27 and 29, would remove distinctive features that characterize the district. These trees are identified both in primary sources literature review and by the 1996 survey (Triem and Stone 1996: district record) as distinctive features of the historic landscape. Industry publications from the period, such as the *California Citriograph*, also note the importance of tree rows. Therefore, the project does not comply with *Standard Number 5* pertaining to retention of historic materials, features, and finishes.

Preservation Standard Number 6: Repair Rather Than Replace

The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture (Birnbaum 1996).

This Standard applies specifically to replacement of existing features. Since Mission Rock would be entirely new construction and would not include replacement of existing features, *Standard Number 6* does not apply. Therefore, staff considers the project in its entirety in compliance with *Standard Number 6* pertaining to repairing rather than replacing historic materials.

Preservation Standard Number 7: Treatments

Chemical or physical treatments, if appropriate, will not be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used (Birnbaum 1996).

This Standard applies specifically to treatments used to preserve historic materials. Since Mission Rock would be entirely new construction and would not include preservation of historic materials, this Standard does not apply. Therefore, staff considers the project in compliance with *Standard Number 7* pertaining to chemical or physical treatments.

Preservation Standard Number 8: Archaeological Resources

Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken (Birnbaum 1996).

A complete discussion of archaeological resources is included in other subsections of this document and the appendix. In summary, adoption of the recommended mitigation measures (**CUL-1** through **CUL-8** and **CUL-15**) would ensure that potential impacts to archeological resources are reduced to a less than significant level. Therefore, staff considers Mission Rock in its entirety to be in compliance with *Standard Number 8* pertaining to archaeological resources.

Impacts to Historic Integrity of the SCVRHD

Historic integrity is the comprehensive effect of seven qualities: location, design, setting, materials, workmanship, feeling, and association. When assessing the historic integrity of a rural historic landscape it is important to consider whether the resource, in its current condition, reflects the spatial organization, physical components, and historic associations that it attained during its period of significance. A resource's period of significance becomes the benchmark for measuring whether subsequent changes contribute to its historic evolution or alter its historic integrity. Evaluation of historic integrity for a rural historic district is directly linked to the comprehensive impact of the landscape components which define the character of the district. As noted above, the period of significance for the SCVRHD is 1887 to 1967.

To assess the historic integrity of the SCVRHD, staff compared the landscape, in its current condition, to information about how the landscape appeared historically, thereby determining the nature and quality of change that has occurred since the period of significance ended. By analyzing the physical characteristics of the SCVRHD in terms of the seven aspects of integrity, it is possible to determine whether the district has sufficient integrity to represent and convey its significance, as well as help staff evaluate what sort of changes will significantly impact the remaining elements of historic integrity (Melnick 1984: 39).

Staff assessed the individual landscape components for their contribution to the landscape, even if the components themselves lacked individual distinction. One of the most significant impacts to the district's elements of integrity occurred in the late 1960s when the State of California constructed Highway 126, roughly parallel to the railroad right-of-way. This linear feature divided farms, barrancas, and tree rows, creating a visual separation in the landscape that impacted the district's integrity of materials, feeling, setting, and association. During the same period as Highway 126's construction, several residential developments were built to the east and west of the district, removing portions of agricultural land from use and affecting the landscape. The residential tracts encroached into the district on the north and south of Telegraph Road, and impacted the district by reducing its overall size. It is likely these residential developments resulted in demolition of historic farm clusters, irrigation systems, and tree rows. Industrial development around Mission Rock Road encroached into the district causing a loss of agricultural land use as well as encroaching on the network of Saticoy Oil Field Subdistrict features. The Todd Road Jail encroached into the district when it expanded in 1999. The jail expansion resulted in the demolition of Beckwith Ranch and the associated landscape features of that property. Beckwith Ranch was found individually eligible, and would be a contributing element to the SCVRHD.

However, the historic evaluation that accompanied the jail expansion occurred in 1990, six years prior to the historical survey that identified the SCVRHD. A 66kV transmission line crosses the valley from north to south, terminating at the Saticoy Substation on Foothill Road. However, the transmission line consists of modest (primarily wooden) poles, which fall within the district's period of significance, and did not significantly alter the district's historic integrity.

The residential and industrial encroachments in the district have impacted the overall size of the resource, but this growth occurred around the perimeter of the landscape itself. The majority of the elements of integrity that define the landscape as a whole remain intact. State Highway 126 bisected the landscape, dividing features that were associated with the agricultural context which make the district significant. State Highway 126 is a linear feature that significantly impacted the district's integrity of design, setting, feeling and association. In 1996, San Buenaventura Research Associates determined that despite the various encroachments and State Highway 126 the district maintained sufficient integrity to be considered a historical resource eligible for listing on the local register, the CRHR, and the NRHP (Triem and Stone 1996: district record).

The significant impacts that occurred to the landscape's historic integrity over time make it important for staff to evaluate the current level of historic integrity, and what sort of future changes may impact the district's historic integrity. **Cultural Resources Figure 7** shows the impacts to the district that have occurred overtime. However, using historical aerial photographs and field reconnaissance, staff determined the district retains an extremely high degree of historic integrity. Using the same techniques, staff has attempted to locate similar citriculture landscapes throughout Southern California's once-infamous Citrus Belt, and determined no other historic landscapes exist with the high concentration of contributing features. **Cultural Resources Figures 9** and **6** compare historic aerial photographs to the existing historic landscape to help demonstrate the high level of historic integrity of the SCVRHD.

The McClellan et al. document specifically points to the introduction of non-historic land uses (including power plants and other public utilities) constructed after the period of significance, and states these facilities are likely to significantly impact the historic integrity of a rural historic landscape (1999:23). **Cultural Resources Table 4** analyzes each element of integrity and the related effects of the proposed Mission Rock project.

Cultural Resources Table 4
Impacts to Integrity and Proposed Mitigation Measures

Element of Integrity	Nature of Impact	Impact before Mitigation	Mitigation	Impact after Mitigation
Location	The location of the SCVRHD and its contributing features would not change as a result of the proposed project.	**Less than Significant**	None	**Less than Significant**
Design	The tree rows in the historic district and irrigation systems represent important design features of the SCVRHD. One intact tree row would be significantly altered by the project's generator tie-line; while other trees would be altered or removed along Ellsworth Barranca and in the foohills. Portions of the historic irrigation system would likely be damaged during installation of the monopoles and trenching for the water and gas lines.	**Significant**	Replacement (CUL-9 & CUL-14)	**Less than Significant**
Setting	The Mission Rock generator tie-line would bisect the historic district, several subdistricts, and historic farm clusters, introducing a modern linear feature to the landscape. The monopoles would be substantially taller than any other structure or feature in the district, and adjacent to several significant resources, including Orchard Farm and the Sharp-Thille farm cluster.	**Significant**	Restoration (CUL-10 & CUL-11)	**Less than Significant**
Materials	Construction of the generator tie-line would significantly damage historic materials that contribute to the SCVRHD. Specifically, removal and alteration of historic trees and damage to historic irrigation systems would occur. These features have been identified as significant historical resources that contribute to the district and their material composition is important to understanding their role in the citrus industry.	**Significant**	Restoration (CUL-10 & CUL-11)	**Less than Significant**
Workmanship	Workmanship associated with the significant features of the SCVRHD would not be impacted by the proposed facility or liner features.	**Less than Significant**	None	**Less than Significant**

Element of Integrity	Nature of Impact	Impact before Mitigation	Mitigation	Impact after Mitigation
Feeling	For the SCVRHD to retain its integrity of feeling, the resource must retain a strong connection to the past events that make it significant. The proposed project would introduce an entirely new facility and, more importantly, a linear feature (transmission line) that would bisect the district and two significant viewsheds, effectively segmenting the district from its place in Southern California citriculture.	**Significant**	Interpretation (CUL-12 & CUL-13)	**Less than Significant**
Association	The SCRVHD is associated with agriculture in the Santa Clara River Valley. The project as-proposed would introduce a transmission line through a highly dense collection of contributing features (See **Cultural Resources Figure 11**). The transmission line and monopoles would effectively sever the district's association with the rural historic context for which it has been associated for over 200 years.	**Significant**	Interpretation (CUL-12 & CUL-13)	**Less than Significant**

Potential Impacts to the SCVRHD Significant Viewsheds

This section focuses on historical resources within the PAA and potential impacts to the significant viewsheds identified through archival research and fieldwork. Visual resource analysis (contained in the **Visual Resources** section) is very different from analyzing potential impacts to historical viewsheds.

Cultural Resources staff worked with visual resources staff to develop a series of viewshed simulations to better understand potential impacts to historical viewsheds. A series of Heritage Observation Points (HOPs) were developed in collaboration with visual resource experts using similar methodology as Key Observation Points (KOPs). However, HOPs were selected based on historical research and fieldwork using conventional cultural resources survey methodology. Base photography was taken in the field by visual resources staff, under the direction of cultural resources staff. Camera positions for the simulation base photography were accurately recorded in the field, using both GPS geo-location and aerial photography. Camera lens settings were recorded in the photo file metadata. Project information provided by the applicant was subsequently used to create accurately scaled and located 3D CAD models of project features appearing in the simulations. This information included scaled power plant and transmission line layouts and architectural elevations; elevations of monopole design; individual monopole locations and heights; and other related project description data. In addition to duplicating the recorded lens settings of the base photos with the virtual

camera in the 3D model, the accuracy of the virtual camera matching was validated with reference to 3D modeling in the scene of identifiable known objects in the photo frames – when the 3D model reference objects and the same objects in the photographs are made to match, then accuracy of the virtual camera is validated. In this way staff is able to ensure the accuracy of scaling and location of the simulated views.

Visual resources staff then rendered the 3D models of project features over the base photography, creating a composite image overlaying the features over the existing scene, duplicating the lighting indicated by the date and time of the photograph. At the power plant site, tree removal depicted was based on the assumptions of a 76-foot pole height per applicant monopole data for Pole #1; 40-foot distance from top to bottom insulator/conductor; a minimum 10-foot clearance from the bottom conductor (76' - 40' – 10' = 26' to top of trimmed trees). The complete set of HOPS is included in **Cultural Resources Figure 13A** through **Cultural Resources Figure 17B**.

Viewsheds are one of the significant characteristics of the SCVRHD. The district's viewsheds connect resources in the valley to their geographic historical context. In addition, these viewsheds help the local inhabitants identify with the local heritage, and understand the broader relationship between the natural and built environments. The Massachusetts Department of Conservation published an important rural historic landscape guidance document in 2009 that states "[m]uch of what is treasured about a historic agricultural landscape are the views of – and – across – open fields. These views are quickly lost if the land is taken out of agricultural use" (Rowcroft 2009:13). The SCVRHD is defined both by open fields and views of the surrounding foothills, which are only broken by the systematic placement of tree rows and clusters of agricultural-related buildings.

Impacts to important viewsheds occur when new elements are introduced. State Route 126 was one example of an introduced element which significantly impacted several historic viewsheds in the late 1960s. This impact occurred primarily at each overpass and off-ramp due to the relative height of these structures. At these locations the freeway rises from the open fields, blocking views of the surrounding agricultural landscape, mountains, farm clusters, and historic windrows.

The proposed generator tie-line consists of 36 transmission structures. Two of these are H-frame structures and 34 are monopoles. Of the 34 monopoles, 19 would be placed within the historic district boundaries. The monopoles would be 5-foot in diameter and mounted with three transistors, each supporting a single transmission line. The poles within the historic district range from as high as 141 feet and as low as 91 feet. The tallest elements in the historic district are historic tree rows with trees that range in height from 50 to 80-feet. Introduction of monopole structures and the associated transmission lines has the potential to significantly impact the historic viewsheds from several specific vantage points in the historic district.

The More-Edwards Adobe was specifically sited so the two level porches on the Monterey Style building looked south across open fields toward the foothills and the Santa Clara River (see **Cultural Resources Figure 18**). The proposed transmission line has the potential to significantly impact this important viewshed by introducing five

monopoles that range from 106-feet to 141-feet. A second important viewshed identified by staff is located on the Sharp-Thille farm cluster (see **Cultural Resources Figure 18**). This significant Italianate Style building was built with a northern orientation to view the foothills; however, the building was also constructed with a large viewing tower and several bedrooms facing east. The tower was designed at considerable expense to allow the home's occupants to look out over the historic district to the north, east and west. The row of workers houses on the Sharp-Thille farm cluster are organized facing the main residence, with the intent of allowing the grower to look west over the workers dwellings and to the citrus landscape beyond. Monopole structures 13 through 22 and the entire transmission line would fall within the Sharp-Thille historic viewshed. The towers closest to the farm cluster would range from 96 to 131 feet in height. The introduction of this transmission line would significantly impact the important viewsheds from the Sharp-Thille farm cluster.

Tree Row Impacts

The project as-proposed has the potential to damage historic tree rows at several locations. These include, but are not limited to, all horizontal drilling locations, the historic tree row at Todd Barranca (Natural Gas Line Route A), and remnants of historic tree rows along Ellsworth Barranca. Staff requested more specific information from the applicant through data requests, but the applicant objected to providing more specific information. Given the lack of project specific information to analyze, staff proposes **CUL-14** to address potential impacts to historic vegetation that would result from the proposed project. **CUL-9** would ensure that known impacts are reduced to a level that can be considered less than significant, while **CUL-14** would ensure that potential impacts to historic trees are avoided through project design or mitigated through replacement pursuant to **CUL-9**.

Avoidance of Potential Impacts

CEQA encourages avoidance of potentially significant impacts as a means for reducing impacts to a less than significant level (Cal. Code Regs., tit. 14 § 21002). For the purposes of archaeological resource analysis, staff suggests adoption of **CUL-6** to avoid impacts to buried, as-yet unknown archaeological resources found during testing and monitoring during construction activities, and **CUL-15** to avoid impacts to a known historic archaeological resource.

For the purposes of built-environment analysis, staff used the *Standards* evaluation, integrity criteria, viewshed, and historic tree analysis provided above to identify several potentially significant impacts to historical resources that would occur as a result of Mission Rock. These impacts are related to the routing of the transmission line and placement of monopoles within the historic district and adjacent to several of the district's most significant farm clusters. The proposed transmission line routing and the sheer size (height and girth) of the monopoles would result in significant impacts to contributing elements, including irrigation features, tree rows, and the farm clusters of Orchard Farm and the Sharp-Thille Ranch.

The Mission Rock electric generation facility is proposed for a site located along the southeastern portion of the district, while the nearest substation capable of interconnection is located in the northwestern portion of the district. This geographic configuration has likely resulted in the transmission line routing as-proposed by the applicant. If the Mission Rock facility were located on an alternative site, impacts to identified historical resources may be reduced. Alternative sites for the Mission Rock facility are discussed in the **Alternatives** section of this PSA. The applicant has not proposed alternative routes for the transmission line through the district. However, given the number of resources present within the district boundaries, it is likely that any alternative transmission line route would result in impacts similar to the proposed project. Therefore, staff attempts to avoid impacts through analysis of potential alternative sites (see the **Alternative** section).

Conclusion

For the purposes of archaeological resource analysis, construction of the proposed project could have a direct impact on one known historical resource, DS-S-01, and could impact buried, as-yet, unknown archaeological resources. Staff recommends adoption of **CUL-15** to avoid impacts to DS-S-01 during construction, and a preconstruction archaeological testing program complimented with a robust mitigation and monitoring plan (**CUL-6**) to avoid impacts to buried, as-yet, unknown archaeological resources.

Impacts to ethnographic resources are inconclusive at this time. Staff is aware of two potential ethnographic resources, a traditional collecting area and a traditional cultural landscape, near the propose project area and is continuing to consult with Native American groups who have knowledge of the area. Staff anticipates that these resources will be fully identified and analyzed in the Final Staff Assessment

For the purposes of built environment resource analysis, construction of Mission Rock, particularly construction of the generator tie-line through the SCVRHD, would result in a series of significant, direct impacts to the historic district as a whole and to individual contributing elements. The project lacks compliance with four of the eight Preservation treatment *Standards* and would significantly impact four elements of the district's high and well-recognized historic integrity. Construction of the monopole structures and trenching through the Orchard Farm Subdistrict could destroy elements of the historical irrigation system. Additionally, the generator tie-line would pass through several significant farm clusters and alter important viewsheds in the district, and the line would bisect a segment of a historic tree row with an extremely high degree of historic integrity. The transmission line would also effectively alter or remove remnants of the historic tree rows along Ellsworth Barranca. Finally, the generator tie-line would pass through the center of the historic district, and bisect three of the district's major public thoroughfares (Highway 126, Telegraph Road, and Foothill Road) which would permanently affect how the valley's residents and broader public experience the historic landscape.

These impacts taken together affect both individual features of the landscape, including spaces and spatial relationships that define the district, and the district as a whole by removing or altering the district's historic integrity elements of materials, setting, feeling, and association. The project as-proposed would result in significant impacts that require mitigation to reduce impacts to a level that can be considered less than significant. Staff proposes mitigation measures (**CUL-9** through **CUL 14**) which, if adopted, would reduce impacts to the built environment historical resources caused by the construction and operation of Mission Rock to a level that is **less than significant**. Without adoption of these mitigation measures, the proposed project would result in significant impacts to the SCVRHD. **Cultural Resources Table 6** presents each potentially affected resource, the impact of the project as proposed, associated mitigation measures, and the level of impacts after mitigation.

Cultural Resources Cultural Resources Table 5
Santa Clara Valley Rural Historic District Impacts & Proposed Mitigation Measures

Resource	Description of Resource	Impact	Mitigation Measure	Impacts after mitigation
Irrigation System and Features	The three irrigation systems are contributors to the SCRVHD.	Potentially significant impacts during construction and maintenance due to construction of the generator tie line, water line, and natural gas line.	**Monitoring CUL-6**	**Less than significant.**
Tree Row near Pole 1	Tree row at Ellsworth Barranca has a high degree of historic integrity and is a contributing feature of the SCVRHD.	Significant impact during construction and maintenance to historic tree row for installation of generator tie line. Removal of trees within 40-foot right of way.	**Replacement CUL-9**	**Less than significant.**
Ellsworth Barranca Vegetation Removal	Tree row has a moderate degree of historic integrity. Blue gum eucalyptus trees along Ellsworth Barranca are character defining features of the SCVRHD.	Potentially significant impact during construction and maintenance to historic tree row for installation of generator tie line. Removal of trees within 40-foot right of way.	**Replacement CUL-14**	**Less than significant.**
Orchard Farm Subdistrict	The Orchard Farm Subdistrict and More Adobe farm cluster contain some of the most historically significant resources in the SCVRHD.	Significant impacts include alterations to the materials, setting, feeling, and association of the farm cluster as well as altering significant viewsheds, spaces, and spatial relationships that define the resource.	**Rehabilitation CUL-10**	**Less than significant.**
Sharp-Thille Ranch Subdistrict	The Sharp-Thille Ranch farm cluster is one of the most historically significant farm clusters in the SCVRHD. The main residence is one of the most architecturally significant resources in the district and local	Significant impacts include alterations to the materials, setting, feeling, and association of the farm cluster as well as altering significant viewsheds, spaces, and spatial relationships that define the resource.	**Rehabilitation CUL-11**	**Less than significant.**

Resource	Description of Resource	Impact	Mitigation Measure	Impacts after mitigation
	landmark #114.			
SCVRHD	Historic landscape with a high degree of historic integrity listed on the Ventura County register and eligible for listing on the CRHP and NRHP and listed on the Ventura County register as a historic district.	Significant impacts include alterations to the materials, setting, feeling, and association of the district as a whole; as well as altering significant viewsheds, spaces, and spatial relationships that define the district.	**Interpretation CUL-12**	**Less than significant.**

Indirect Impacts

Staff analyzes reasonably foreseeable indirect impacts that may result from a proposed project. Title 14, California Code of Regulations, section 15064(a)(2)(d)(1-2), defines direct impacts as physical changes that are caused by and immediately related to the project, while an indirect change is defined as a physical change that is not immediately related to the project, but which is caused indirectly by the project.

Neither the applicant nor staff has identified any indirect impacts to cultural resources that qualify as historical resources or unique archaeological resources under CEQA.

Staff has reviewed the literature search materials, other available studies as noted herein and performed on-site and off-site reconnaissance surveys. Based on the information available, staff concludes that Mission Rock would have no indirect impacts on known prehistoric, ethnographic, or historic resources. Therefore, staff does not recommend any mitigation measures for indirect impacts to prehistoric, ethnographic, or historic resources.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact when a project's effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, § 15130). Cumulative impacts to historical resources in the project vicinity could occur if any other existing or proposed projects, in conjunction with Mission Rock, had, are having, or would have impacts on historical resources that, considered together, would be significant.

Archaeological Resources

For the purposes of cumulative archaeological impacts analysis, both prehistoric and historic archaeological resources, staff has determined that the cumulative analysis for archaeological resources comprises a 6-mile radius from the proposed project site (**Executive Summary Figure 1**). The cumulative project's area of analysis

encompasses the project site and geographic qualities that are likely of concern to the valley's inhabitants, both prehistoric and historic.

Staff identified a total of 51 cumulative projects in the 6-mile radius. Of the 51 projects with information available concerning impacts or potential impacts to archaeological historical resources, at least 41 of these projects could contribute to a cumulative impact to archaeological historical resources (**Cultural Resources Appendix CR1 Table A7**).

The ground disturbance from prior projects and the ground disturbance related to the construction of Mission Rock and other proposed projects in the 6-mile radius could have a cumulative impact on buried, as-yet unknown archaeological deposits, both historical or unique archaeological resources (as defined under CEQA). However, staff-proposed Conditions of Certification **CUL-1** through **CUL-8** and **CUL-15** would reduce Mission Rock-specific impacts to a less-than-significant level and therefore, Mission Rock's contribution to cumulative impacts on prehistoric and historic archaeological resources would be less than cumulatively considerable.

Built Environment Resources

For the purposes of cumulative built environment analysis staff compiled a list of past, present, and reasonably foreseeable future projects with impacts to the SCVRHD, or similar historic landscape resources in the region. **Cultural Resources Table 6** is the list of projects staff considered and the type of impacts to the SCVRHD or similar historical resources in the project vicinity caused by the project. **Cultural Resources Figure 19** shows these projects in relation to the proposed project. These projects were selected because of their impacts to the SCVRHD or other historical resources similar to the district, and with a relative close proximity to the proposed project. Staff considers proposed mitigation measures sufficient to reduce the impacts of Mission Rock to less than significant, but when projects with similar impacts are considered, a cumulative impact may still exist and must be considered.

The relatively high number of past, present, and future projects with significant impacts to historical landscape resources which contribute to the SCVRHD, demonstrate a high potential for cumulative impacts to historical resources given the impacts of the proposed project. These resources convey to the public an understanding of the SCVRHD's heritage value, and are being impacted at a relatively high rate. Mission Rock would result in a series of impacts to historical resources within the district, that when considered along with past, present, and foreseeable future projects, are likely to result in significant cumulative impacts. Staff designed **CUL-13** (historical signage, see **Cultural Resources Figure 22** for current state of existing sign) with the goal of reducing cumulative impacts of the proposed project to cultural resources to a less than significant level. **CUL-13** is an interpretative mitigation measure, intended to help the public understand and appreciate the significance of the SCRVHD and similar resources by offsetting the level of impacts caused by the proposed project.

Cultural Resources Table 6
Cumulative Projects with Potential to Impact Built Environment Resource

Project	Description	Location	Impacts/Potential Impact
Todd Road Jail Evidence Storage Building, PL14-0125	Adjustment to CUP 4735-2 to authorize a 20,000 sq. ft. evidence storage building at the Todd Rd Jail.	600 Todd Rd, Santa Paula	Construction of the Ventura County Jail in 1999 resulted in demolition of Beckwith Ranch, identified as a significant historic farm eligible for listing in the CRHR and the NRHP. **Demolition of a contributing resource is a significant environmental impact to historical resources.**
Todd Road Jail Medical Wing Expansion	60,000 sq. ft. of a medical wing.	600 Todd Rd, Santa Paula	Future expansion of the Ventura County Jail will result in removal of agricultural land from the historic district. Expansion of the jail is likely to impact agricultural land in the SCVRHD. The agricultural land itself was identified as a contributing element to the SCVRHD. **Loss of contributing agricultural land presents a potentially significant environmental impact to historical resources.**
Santa Paula West Business Park Specific Plan (SPWBPSP), 3-CDP-04	Mixture of light manufacturing, research and development, professional office and supporting commercial uses. Proposed on 53-acres of agricultural land.	Telegraph Rd & Beckwith Rd, Santa Paula	Project results in demolition of the Atmore Employee Residence, a contributing element of the SCVRHD. Build-out will remove the land (53 acres) from agricultural use. The agricultural land itself was identified as a contributing element to the SCVRHD. **Demolition of a contributing resource along with removal of agricultural use is a potentially significant impact to historical resources**.
O'Kote Pipe Factory Project, 15-CDP-06	CDP request for 52,000 sq. ft. industrial factory. 120,800 sq. ft. surface lot for on-site parking for 111-vehicles. Parcel currently used for agricultural row crops; half of the parcel proposed for development- other half remain in agricultural production.	630 Todd Ln, Santa Paula	This project removes 60,000 square feet of agricultural land from use and replaces it with a parking lot and industrial factory. The agricultural land itself is a contributing element to the SCVRHD. **Therefore, the project would result in a potentially significant impact to historical resources.**
Williams Homes / River Rock Project (City Project No. 2014-CDP-02)	40 new homes and the retention/rehabilitation of the Hardison House main residence and barn/stables. Project requires demo of existing structures (excluding Hardison House, barn/ stables)	1226 Ojai Road, Santa Paula	The River Rock Project proposes to demolish two buildings which are contributing elements to the Hardison Ranch. The Hardison Ranch is a comparatively small historic agricultural landscape north of Santa Paula, with similarities to the SCVRHD. **Demolition of these buildings and other landscape features will result in potentially significant impacts to historical resources.**

Project	Description	Location	Impacts/Potential Impact
	which are a historic resource. 9.18-acres to remain open space.		
Limonera Company - East Area 1 Specific Plan Amendment	501-acre site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2-acres of civic uses for school facilities, and 225.3-acres open space and park uses.	Telegraph Rd. and Padre Ln (east of Santa Paula Creek), Santa Paula	The East Area 1 Specific Plan results in demolition of the Teague-McEverit Citrus Ranch. The resource was identified as a 500-acre historic landscape eligible for listing on the CRHR and the NRHP with a similar historic context to the SCVRHD. **The project results in demolition of nearly the entire historic landscape and was found to result in significant impacts to historical resources.**

SCVRHD Impacts and Mitigation Determinations

The impacts to historical resources are divided into five categories: impacts to contributing trees, impacts to the More-Edwards farm cluster and Orchard Farm Subdistrict, impacts to the Sharp-Thille farm cluster, impacts to the landscape as a whole, and cumulative impacts. These categories each have a different number of contributing resources, historic significance, and are impacted differently by the proposed project. Staff weighted each impact category based on the number of resources affected, the historic significance of the resource, and the level of impacts to the individual resource or district to determine the level of mitigation appropriate for each resource. This process led to an overall impact score for each impact category. Staff then calculated these impact scores into a percentage that is shown in **Cultural Resources Figure 20**.

The impact score makes several assumptions based on the information provided by the applicant, as well as independent research and fieldwork conducted by staff. First, to calculate the number of resources, staff counted only the number of resources Mission Rock has the potential to impact. For instance, the tree rows on the Sharp-Thille farm cluster were not included in the overall resource count for the district because these specific contributors are unlikely to be impacted by the transmission line or monopoles. Second, when impacts to elements of irrigation features were likely to result from ground disturbance, staff counted the irrigation system as a single resource, rather than counting the individual elements of each system as an individual resource. Finally, although the landscape has thousands of contributing features, the landscape itself is counted as a single resource for the purposes of this analysis.

Significance of the resource is weighted based on the contribution of the individual resource to the district as a whole and to our understanding of California history. For instance, when staff considered the significance of the entire landscape, the significance level is reduced because the proposed project would impact only a portion of the district (primarily along the transmission line), and would not impact the integrity of other portions of the historic landscape.

When considering impacts to each historical resource, staff considered the relative number of resources of a similar type and the impacts of the proposed project. For example, removal of trees at pole one is not considered as severe an impact because there are upwards of 30 tree rows in the district as a whole. On the other hand, the More Adobe on Orchard Farm and the Sharp-Thille farm clusters are both unique and irreplaceable contributors to the landscape. Therefore, staff considers the project's impacts to these resources greater than impacts to other features that may be more numerous or renewable.

Staff designed mitigation measures **CUL-9** through **CUL-14** based on the impact score shown in **Cultural Resources Figure 20**. The specific mitigation measures are roughly proportionate to the level and type of impacts that would result from Mission Rock as-proposed. Working from the impact scores, staff applied mitigation to offset each impact in an attempt to reach a level that staff believes would reduce these impacts to less than significant. The mitigation measures compensate for impacts using three methods: Replacement (**CUL-9** & **CUL-14**); Rehabilitation (**CUL-10** & **CUL-11**); and Interpretation (**CUL-12** & **CUL-13**). Staff consulted professionals in each field to estimate what each mitigation measure would cost to fully execute in an effort to ensure the mitigation was feasible and these estimates are included in **Cultural Resouces Table 7**. **Cultural Resources Figure 21** provides the estimated cost for each mitigation measure. **Cultural Resources Figure 20** and **21** demonstrate that the level of impact is roughly proportionate to the mitigation proposed and is feasible given the level of impacts to the SCVRHD and its contributing resources.

Cultural Resources Table 7
Cost Estimates for SCVRHD Mitigation Measures

Condition	Description	Estimate
CUL-10	More Adobe Restoration Project - The project owner shall fund design, historic stabilization, and restoration of the More Adobe on Orchard Farm according to the U.S. Secretary of the Interior Standards for Rehabilitation.	$1,440,075.00
CUL-11	Restoration of Sharp-Thille Historic Gardens - The project owner shall fund the preservation plan, project design, and landscape restoration of the Sharp-Thille Victorian Garden according to the U.S. Secretary of the Interior Standards for Rehabilitation.	$350,000.00
CUL-12	Historic Intrepetation of Farmworkers in the Santa Clara River Valley - The project owner shall make a contribution to the Agricultural Museum, a satellite branch of the Ventura County Museum, sufficient to complete an interpretative exhibit on the history of agricultural workers in the Santa Clara River Valley.	$20,000.00
CUL-13	Heritage Valley Sign Restoration - The project owner shall provide funds to the Heritage Valley Tourism Bureau for the purpose of restoring two signs celebrating the historical significance of the Santa Clara River Valley.	$15,000.00

OPERATION IMPACTS

Operation of the Mission Rock facility and maintenance of its linear facilities would cause long term impacts that are similar to the construction impacts of the proposed project. Maintenance of the generator tie-line at the tree row to the west of the project site (Pole 1), and along Ellsworth Barranca would be similar to impacts during construction of the transmission line. The impact of routing the transmission line through the center of the SCVRHD, and adjacent to the More-Edwards farm cluster, through the Orchard Farm Subdistrict, and adjacent to the Sharp-Thille farm cluster would be similar to construction of the facility. Therefore, implementation of **CUL-1** through **CUL-15** would reduce operation impacts to a level that staff considers **less than significant.**

COMPLIANCE WITH LORS

The applicable state laws, ordinances, regulations, and standards are listed above in **Cultural Resources Table 1**. The SCVRHD is listed on the Ventura County list of Landmarks and Points of Historical Interest. This qualifies as a local register of historical resources pursuant to Title 14, California Code of Regulations, section 15064.5 (a)(2), making the district an historical resource for the purposes of CEQA. Resources listed on the Ventura County list of Landmarks and Points of Historical Interest are subject to the provisions in Ventura County Ordinance Number 4225: *Cultural Heritage Ordinance* (as amended). The criteria for reviewing projects involving locally listed resources in Ventura County are similar to the CRHR and the NRHP. Therefore, staff can definitively state that the project would comply with Ventura County's Cultural Heritage Ordinance, and all other identified LORS.

Impacts to as-yet-unidentified prehistoric and historic archaeological resources that qualify as historical or unique under CEQA could occur during construction of the proposed project; staff-proposed Conditions of Certification **CUL-1** through **CUL-8** would mitigate such impacts to less-than-significant levels. These conditions establish the necessary protocols to constructively handle the issues identified in **Cultural Resources Table 1**: the treatment of human remains discoveries during project-related ground disturbance (**CUL-1 – CUL-8**), prevention of unauthorized removal of Native American remains or artifacts from a Native American grave or cairn (**CUL-1 – CUL-8**), and non-disclosure of records pertaining to ethnographic consultants or archaeological site information (**CUL-3**).

The Ventura County General Plan, Ventura County Initial Study Assessment Guidelines, and other supporting municipal codes, policies, and documents have language promoting the general preservation of cultural resources (see **Cultural Resources Table 1**). The conditions of certification require specific actions not just to promote but to affect historic preservation and mitigate impacts to all historical resources in order to ensure CEQA compliance. Therefore any impacts to historical resources would be mitigated to a less than significant level through the implementation of staff-proposed Conditions of Certification **CUL-1 – CUL-15**.

CONCLUSIONS AND RECOMMENDATIONS

The AFC (CAL 2015a: 5.3) acknowledges the project would result in significant impacts to 13 historical resources in the PAA. However, there is little discussion of impacts to other contributing resources (such as tree rows, irrigation systems), or to the SCVRHD as a whole. The applicant acknowledges impacts to individual buildings on historic farm clusters and subdistricts, but the mitigation proposed by the applicant is insufficient to reduce the impacts to a less than significant level. The applicant proposed two mitigation measures for the impacts to historical resources: Transmission Pole Treatment and More Adobe Documentation.

APPLICANT CULTURAL RESOURCE MITIGATION NUMBER 1

Transmission Pole Treatment involves allowing the transmission poles to oxidize. This proposed mitigation measure may be applicable as mitigation for visual impacts; however, this does not share a nexus to the impacts to historical resources discussed above. The applicant's Transmission Pole Treatment is discussed and incorporated into the **Visual Resources** section of the PSA. Given the lack of a justifiable nexus to historical resource impacts, staff developed **CUL-9** and **CUL-12** through **CUL- 14**, to address the impacts the transmission line would have on contributing trees, the SCVRHD as a whole, and cumulative impacts to cultural resources.

APPLICANT CULTURAL RESOURCE MITIGATION NUMBER 2

Documentation of the More Adobe would include documenting the More Adobe, presumably to a Historic American Building Survey-level. Presumably this mitigation is an attempt to mitigate impacts to the More Adobe farm cluster, but staff has concluded this is insufficient given the level of severity of the impacts to the More Adobe farm cluster and Orchard Farm Subdistrict that would result from the introduction of the transmission line and installation of the underground facilities (water and gas). The applicant's discussion of impacts to the More Adobe farm cluster focuses on the orientation of some buildings in the district facing "inward" and the lack of public access to the resources. In fact, the oldest and most significant building in the farm cluster, the More Adobe, was designed to face the Santa Clara River and South Mountain foothills beyond. This viewshed is extremely important in understanding the development of agriculture in the Santa Clara River Valley and an important feature of the district. Impacts to the Orchard Farm Subdistrict, which includes several individually eligible resources, and the associated farm cluster around the More Adobe, would result in significant impacts of its own. Staff recommends **CUL-10**, which includes a complete stabilization and rehabilitation of the More Adobe, to mitigate impacts to this resource to a less than significant level. Similar impacts would occur to the Sharp-Thille Subdistrict and staff proposes **CUL-10**, which includes rehabilitation of the Sharp-Thille historical garden to reduce impacts to less than significant.

Based upon the AFC, staff's background research, fieldwork, and associated documentation, staff concludes that with the adoption of the proposed Conditions of Certification **CUL-1** – **CUL 15** there would be no significant impacts from the proposed project on prehistoric and historic archaeological resources. There is high potential for subsurface deposits in the PAA, and the conditions of certification would permit the impacts to these resources to remain at a level that is **less than significant.**

Based upon the AFC, staff's background research and fieldwork, and associated documentation, staff concludes that with the adoption of the proposed Conditions of Certification **CUL-1** – **CUL 15** impacts of the proposed project on historical built environment resources, including the SCVRHD, would be reduced to a level that is considered **less than significant.**

Staff is unable to conclude at this time if ethnographic resources would be impacted by the proposed project. The ethnographic background information included in **Cultural Resources Appendix CR-1** provides a brief context for the prehistoric resources discussed above. Staff anticipates that these resources will be fully identified and analyzed in the Final Staff Assessment after additional comments and consultations with Native Americans.

Staff has considered environmental justice populations in its analysis of the project. Because staff has not made a conclusive identification and analysis of the potential ethnographic resources, staff cannot conclude at this time if Native Americans would be considered an environmental justice population that could be impacted by the proposed Mission Rock project. A conclusion will be made regarding environmental justice populations for the Final Staff Assessment.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 APPOINTMENT AND QUALIFICATIONS OF CULTURAL RESOURCES SPECIALIST (CRS)

A. CULTURAL RESOURCE SPECIALIST

1. Appointment and Qualifications

   The project owner shall assign a Cultural Resources Specialist (CRS) and at least one Alternate CRS to the project. The project owner shall submit the resumes of the proposed CRS and Alternative CRS(s), with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for review and approval.

   The CRS and Alternate CRS(s) shall have training and background that conform to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, Part 61. In addition, the CRS and Alternate CRS(s) shall have the following qualifications:

   1. A background in anthropology, archaeology, history, architectural history, or a related field;

2. At least 5 years of archaeological or historical experience (as appropriate for the project site), with resources mitigation and fieldwork;

3. At least one year of field experience in California; and

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

The project owner may replace the CRS by submitting the required resume, references and contact information of the proposed replacement CRS to the CPM.

2. Duties of Cultural Resources Specialist

The CRS shall manage all cultural resource testing, cultural resource monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resource activities, unless management of these is otherwise provided for in accordance with the cultural resource conditions of certification (conditions). The CRS shall serve as the primary point of contact on all cultural resource matters for the Energy Commission. The CRS shall obtain the services of Cultural Resource 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.

After all ground disturbances are completed and the CRS has fulfilled all responsibilities specified in these cultural resources conditions, the project owner may discharge the CRS, after receiving approval from the CPM.

The cultural resource conditions shall continue to apply during operation of the proposed power plant, limited to those ground disturbing activities in non-fill sediments.

B. CULTURAL RESOURCES MONITORS

1. Appointment and Qualifications

The CRS shall assign Cultural Resources Monitors (CRMs). CRMs shall have the following qualifications:

1. B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field; and one year of archaeological field experience in California; or

2. A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years of archaeological field experience in California; or

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

C. NATIVE AMERICAN MONITORS

1. Appointment and Qualifications:

   The project owner shall obtain the services of qualified Native American Monitors (NAMs). Preference in selecting NAMs shall be given to Native Americans with:

   1. traditional ties to the area to be monitored, and

   2. the highest qualifications as described by the Native American Heritage Commission (NAHC) document entitled: Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites (NAHC 2005).

D. CULTURAL RESOURCES TECHNICAL SPECIALISTS

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

Verification:

1. The project owner shall submit the specified information at least 75 days prior to the start of (1) ground disturbance (as defined in the Compliance Conditions and Compliance Monitoring Plan section); (2) post-certification cultural resources activities (including, but not limited to, "survey", "in-field data recording," "surface collection," "testing," "data recovery" or "geoarchaeology"); or (3) site preparation or subsurface soil work during pre-construction activities or site mobilization.

2. The project owner may replace a CRS by submitting the required resume, references and contact information to the CPM at least 10 working days prior to the termination or release of the then-current CRS. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent CRS is proposed to the CPM for consideration.

3. At least 20 days prior to ground disturbance, the CRS shall provide proof of qualifications for any anticipated CRMs and additional specialists for the project to the CPM.

4. If efforts to obtain the services of a qualified NAM are unsuccessful, the project owner shall inform the CPM of this situation in writing at least 30 days prior to the beginning of post-certification cultural resources field work or construction-related ground disturbance.

5. At least 5 days prior to additional CRMs or NAMs beginning on-site duties during the project, the CRS shall review the qualifications of the proposed CRMs or NAMs and send approval letters to the CPM, identifying the monitors and attesting to their qualifications.

6. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

7. At least 10 days prior to the start of construction-related ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

8. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM.

CUL-2 INFORMATION TO BE PROVIDED TO CRS

Prior to the start of ground disturbance, the project owner shall provide the CRS with copies of the application for certification (AFC), data responses, confidential cultural resources reports, all supplements, the Energy Commission staff's Cultural Resources Final Staff Assessment, and the cultural resources Conditions from the Final Decision for the project, if the CRS does not already possess copies of these materials. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:24,000 and 1 inch = 200 feet, respectively) for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities.

No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

Maps shall include any National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) -eligible cultural resources, including any historic built environment resources, identified in the project area of analysis.

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

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

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

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

Verification:

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

2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

4. Weekly, during ground disturbance, a schedule of the next week's anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

5. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

6. If a new CRS is approved by the CPM as provided for in CUL-1, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, Final Commission Decision, and maps and drawings have been provided to the new CRS within 10 days of such approval.

CUL-3 CULTURAL RESOURCES MITIGATION AND MONITORING PLAN (CRMMP)

Prior to the start of ground disturbance, the project owner shall submit the CRMMP, as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the draft model CRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall identify measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM. The CRMMP shall be designated as a confidential document if the location(s) of cultural resources are described or mapped.

The CRMMP shall include the following elements and measures.

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the conditions of certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP."

2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any CRHR-eligible (as determined by the CPM) resources. A prescriptive treatment plan may be included in the CRMMP for limited data types.

3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

5. A description of the manner in which Native American monitors will be included, the procedures to be used to select them, and their role and responsibilities.

6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects.

7. A statement that all encountered cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms, mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's (SHRC's) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from the SHRC), into a retrievable storage collection in a public repository or museum.

8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

9. A statement demonstrating when and how the project owner will comply with Health and Human Safety Code 7050.5(b) and Public Resources Code 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.

10. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.

11. A description of the contents, format, and review and approval process of the final Cultural Resource Report (CRR), which shall be prepared according to *Archaeological Resource Management Report (ARMR)* guidelines.

12. Per CUL-6 CRMMP shall include detailed testing plan for the reclaimed water pipeline and natural gas pipeline prepared by the CRS or alternate CRS.

Verification:

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

2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.

3. At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery).

4. Within 90 days after completion of ground disturbance (including landscaping), if cultural materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the State Historic Resources Commission's (SHRC) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from SHRC), to accept the cultural materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-4 FINAL CULTURAL RESOURCES REPORT (CRR)

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

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

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

3. Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons of any Native American groups requesting copies of project-related reports.

CUL-5 CULTURAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

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

The training shall include:

1. A discussion of applicable laws and penalties under law;

2. Samples or visuals of artifacts that might be found in the project vicinity;

3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;

5. A brief discussion of the historical significance of 890 Mission Rock Road and the importance for employees to avoid damaging it when working in the vicinity of the structure;

6. 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;

7. 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;

8. An informational brochure that identifies reporting procedures in the event of a discovery;

9. An acknowledgement form signed by each worker indicating that they have received the training; and

10. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

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

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the cultural resources WEAP training program draft text and/or training video, including Native American participation, graphics and the informational brochure, to the CPM for review and approval.

2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 CULTURAL RESOURCES MONITORING

The project owner shall ensure that a CRS, alternate CRS, or CRMs shall monitor, full time, all ground disturbance associated with construction of the power block, installation of generator tie-line poles 1 through 21, and along the natural gas pipeline route (routes A or B) and the reclaimed water pipeline route to ensure there are no impacts to presently unknown cultural resources.

Prior to trenching the reclaimed water pipeline and the natural gas pipeline, the project owner shall ensure that the CRS, alternate CRS, or CRMs test a 600 cm^2-sediment column every 100 meters along the route(s) where it is located in Holocene alluvium using a screw auger or similar machine to assess whether buried archaeological resources are present. The sediment column at each testing locale shall represent the complete complement of sedimentary layers that the excavation of the pipeline trench(es) will cut

through, in at least two discreet vertical samples representing the upper and lower portion of the trench. The project owner shall ensure that all of the sediments of the column, representing strata from the ground surface to the bottom of the pipeline trench(es) at each locale, are sifted through -1/8 inch mesh screen. If the sifting results in the identification of cultural materials, artifacts and ecofacts as commonly defined in the discipline of archaeology, the project owner shall notify the CPM and obtain the services of a qualified geoarchaeologist. The geoarchaeologist shall meet the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric archaeology and shall demonstrate the completion of graduate-level coursework in geoarchaeology or Quaternary science. The geoarchaeologist will record the stratigraphic profile that captures the complete complement of stratigraphic layers that the excavation of the pipeline(s) construction trench will cut through, at the location of the identified cultural materials, including the strata above and below the identified cultural materials. The stratigraphic profile shall be recorded from direct observation by excavation employing mechanical (e.g., backhoe) or hand excavation methods, depending on the depth at which cultural materials are encountered, taking into account all necessary safety considerations, and according to a plan prepared by the CRS or alternate CRS to be included in the CRMMP and submitted to the CPM for approval. The primary purpose of completing the profiles will be to ascertain if cultural materials occur *in situ* (i.e., in a culturally created context primarily representing human behavior) or if they have been redeposited by geological processes (and no longer maintain scientifically meaningful spatial and temporal relationships reflecting human behavior). The project owner's geoarchaeologist will analyze each profile containing cultural materials and make a determination regarding the depositional context of any cultural material find. If the cultural materials are determined to be *in situ*, the project owner shall ensure that soil humate samples from each such profile are submitted for radiocarbon assay to ascertain the approximate age of the sedimentary deposits in which the found cultural materials are embedded. The results of this sampling and any stratigraphic recordation done by the geoarchaeologist as a component of the cultural resources monitoring for the construction of the project, shall be reported in its entirety in the CRMMP required under **CUL-4**. The project owner shall ensure that the geoarchaeologist and the CRS collaborate on the treatment of any discovery of cultural materials that result from this sampling per the provisions of **CUL-7**. The project owner shall ensure that Native American monitors are provided an opportunity to monitor all ground disturbance associated with this testing.

Prior to the start of ground disturbance for the project, the project owner shall notify the CPM and NAMs of the date on which ground disturbance will ensue. Where excavation equipment is actively removing dirt and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than

50 feet from the location of active excavation, one monitor shall observe both the location of active excavation and inspect the dumped material.

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

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

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

- First and last name of the CRM and any accompanying NAM.
- Time in and out.
- Weather. Specify if weather conditions led to work stoppages.
- Work location (project component). Provide specifics—.e.g., power block, landscaping.
- Proximity to site location. Specify if work conducted within 1000 feet of a known cultural resource.
- Work type (machine).
- Work crew (company, operator, and foreman).
- Depth of excavation.
- Description of work.
- Stratigraphy.
- Artifacts, listed with the following identifying features:
- Field artifact #: When recording artifacts in the daily monitoring logs, the CRS shall institute a field numbering system to reduce the likelihood of repeat artifact numbers. A typical numbering system could include a project abbreviation, monitor’s initials, and a set of numbers given to that monitor: e.g., MR-MB-123.

- Description.
- Measurements.
- Universal Transverse Mercator coordinates.
- Whether artifacts are likely to be isolates or components of larger resources.
- Assessment of significance of any finds.
- Actions taken.
- Plan for the next work day.
- A cover sheet shall be submitted with each day's monitoring logs, and shall at a minimum include the following:
    - Count and list of first and last names of all CRMs and of all NAMs for that day.
    - General description (in paragraph form) of that day's overall monitoring efforts, including monitor names and locations.
    - Any reasons for halting work that day.
    - Count and list of all artifacts found that day: include artifact #, location (i.e., grading in Unit X), measurements, UTMs, and very brief description (i.e., historic can, granitic biface, quartzite flake).
    - Whether any artifacts were found out of context (i.e., in fill, caisson drilling, flood debris, spoils pile).

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

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

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

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

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

- The Cultural Resources section of the MCR shall be prepared in coordination with the CRS, and shall include a monthly summary report of cultural resources-related monitoring. The summary shall:
  - List the number of CRMs and NAMs on a daily basis, as well as provide monthly monitoring-day totals.
  - Give an overview of cultural resource monitoring work for that month, and discuss any issues that arose.
  - Describe fulfillment of requirements of each cultural mitigation measure.
  - Summarize the confidential appendix to the MCR, without disclosing any specific confidential details.
  - Include the artifact concordance table (as discussed under the next bullet point), but with removal of UTMs.
  - A concordance table that matches field artifact numbers with the artifact numbers used in the DPR forms shall be included. The sortable table shall contain each artifact's date of collection and UTM numbers, and note if an artifact has been deaccessioned or otherwise does not have a corresponding DPR form. Any post-field log recordation changes to artifact numbers shall also be noted.
  - DPR forms shall be submitted as one combined PDF.
  - The PDF shall organize DPR forms by site and/or artifact number.
  - The PDF shall include an index and bookmarks.
  - If artifacts from a given site location (in close proximity of each other or an existing site) are collected month after month, and if agreed upon with the CPM, a final updated DPR for the site may be submitted at the completion of monitoring. The monthly concordance table shall note that the DPR form for the included artifacts is pending.

Each MCR, prepared under supervision of the CRS, shall be accompanied by a confidential appendix that contains completed DPR 523A forms for all artifacts recorded or collected in that month. For any artifact without a corresponding DPR form, the CRS shall specify why the DPR form is not applicable or pending (i.e. as part of a larger site update).

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

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

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

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

Upon becoming aware of any incidents of non-compliance with the conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM.

The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will notify all Native Americans Monitors of the date on which the project's ground disturbance will begin.

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

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

4. The CRS and/or project owner shall notify the CPM of any incidents of non-compliance with the conditions and/or applicable LORS by telephone or email within 24 hours.
5. The CRS shall provide daily maps of artifacts along with the daily monitoring logs if more than 10 artifacts are found per day, or as requested by the CPM.

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

7. Within 15 days of receiving from a local Native American group a request that a NAM be employed, the project owner shall submit a copy of the request and a copy

of a response letter to the group notifying them that a NAM has been employed and identifying the NAM.

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

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

10. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

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

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

13. Within 15 days of completing testing procedures along the reclaimed water pipeline and the natural gas pipeline the CRS shall submit a report of sampling results that includes the identification of cultural materials, artifacts and ecofacts identified during testing to CPM for review and approval.

CUL-7 POWERS OF CRS / CULTURAL RESOURCES DISCOVERY PROTOCOLS

The CRS shall have the authority to halt ground disturbance in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

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

discovery shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary Record" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary Record" form shall include a recommendation on the CRHR/NRHP eligibility of the discovery. The project owner shall submit completed forms to the CPM.

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

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

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

3. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery, and the CRS must inform the CPM when the notifications are complete.

4. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

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

CUL-8 FILL SOILS

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

Verification:

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

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

CUL-9 REPLACEMENT OF CONTRIBUTING TREES

The project owner shall plant a tree row in a historic alignment (north-south) within the boundaries of the SCVRHD.

1. Trees shall be located in an area identified by the applicant, subject to approval by the CPM;

2. Project owner shall obtain land-owner consent for tree planting prior to start of construction;

3. Project owner shall provide product data for proposed trees that includes age, species, and source of trees selected by the project owner.

4. Impacted tree row shall be replaced on a 2-1 basis depending on the number of trees in the row or linear feet of tree row, whichever is greater (trees are planted every five feet);

5. Trees shall be no-less than 6-feet tall, or five gallon pot, whichever is greater, when planted;

6. Additional trees shall be planted based on the number of blue gum eucalyptus trees removed or altered along Ellsworth Barranca;

7. Any additional trees planted to compensate for loss of trees at Ellsworth Barranca shall be replanted along Ellsworth Barranca as close as feasibly possible to the location where trees are removed.

8. New trees shall be blue gum eucalyptus, or similar species (e.g., *Melaleuca quinqenervia)*, subject to approval by the CPM.

9. Prior to start of transmission line construction, project owner shall install a watering system in accordance with Ventura County Landscape Design Critieria (1992); Prior to start of transmission line construction, project owner shall submit final landscape plan for CPM review and approval;

10. Project owner shall maintain trees for the life of the project.

Verification:

1. 30-days before of start of construction of the transmission line, project owner shall submit credentials of licensed landscape architect and certified arborist to the CPM for review and approval. Landscape architect credentials must demonstrate a minimum of 10-years of experience working on similar projects.

2. 60-days after start of construction of the transmission line, project owner shall submit evidence of executed landowner agreement, including site plans indicating extent and configuration of new trees to CPM for review and approval.

3. 90-days after start of construction of the transmission line, project owner shall submit product data for proposed tree species, and all other products (i.e. fertilizer, irrigation system, etc.) to CPM for review and approval.

4. Project owner shall submit to CPM, a report and documentation of all trees planted a minimum of 30-days after transmission line construction is complete. Planting completion date subject to change depending on planting season and advice from certified arborist, subject to approval of the CPM.

5. Project owner shall submit annual reports to the CPM for review and approval demonstrating irrigation system is being maintained pursuant to terms of the agreement.

6. Project owner shall submit annual arborist report to the CPM for review and approval indicating replanted trees are being maintained in accordance with best management pratices.

7. Project owner shall submit arborist report, which includes complete status report yearly after project on-line date. Any dead or declining trees identified shall be replaced based on the recommendation of the certified arborist.

8. Project owner shall submit arborists report to CPM demonstrating appropriate maintenance and trimming at arborist-reccomended intervals for the life of the project.

CUL-10 MORE ADOBE RESTORATION PROJECT

The project owner shall fund design, historic stabilization, and restoration of the More Adobe on Orchard Farm according to the U.S. Secretary of the Interior Standards for Rehabilitation.

1. Project owner shall execute a contract with the Limoneira Company (Limoneira) indicating that the company will provide funds to Limoneira, subject to CPM review and approval, for the purpose of completing the restoration of the More Adobe.

2. Restoration project shall be a design-build contract between Limoneira and the restoration design team and contractor based on recommendations from a historic preservation architect, structural engineer, and contractor, with the goal of meeting the Limoneira Company's programmatic needs.

3. Design Team must demonstrate a minimum of 10-years of experience working on complex restoration project, including experience working on dilapidated historic buildings. Project experience must demonstrate familiarity with adobe construction, including past project experience working on adobe restoration projects. Architect and structural engineer shall have successfully completed a minimum of 5 adobe restoration projects.

4. Contractor shall have minimum of 10-years of experience working on historic restoration projects, including experience working on dilapidated historic buildings. Project experience must demonstrate familiarity with adobe construction, including past project experience working on adobe restoration projects. Contractor shall have successfully completed a minimum of 5 adobe restoration projects.

5. All design and site plans shall be subject to review and comment by the Limoneira Company Board of Directors and the Ventura County Cultural Heritage Board. Project plans shall comply with the U.S. Secretary of the Interior Standards for Rehabilitation and are subject to CPM review and approval.

6. Work shall proceed in the following order: project design, seismic stabilization, exterior envelope repair, mechanical, electrical, plumbing upgrades, and interior renovation/restoration.

7. Narrative work plan shall include an appendix of all Material, Safety, Data (MSDS) cut sheets and Product Data cut sheets for all work to occur as part of the restoration project.

8. Monthly progress reports shall include all approved change orders, updates to scope of work, schedule for competition of the restoration project, and any anticipated delays or cost overruns. Reports shall include any new subcontractors involved, a scope of work, and their credentials.

Verification:

1. 30-days prior to the start of site assessment/pre-construction, the project owner shall submit a copy of the executed contract with Limoneira indicating that the project owner will provide funds necessary to complete the restoration of the More Adobe to the CPM for review and approval. This contract will include the timeframe and budget for restoration work, and that Limoneira agrees to the restoration work.

2. 30-days prior to the start of transmission line construction, the project owner shall submit credentials for a historic restoration architect and structural engineer to the CPM for review and approval.

3. 60-days following start of transmission line construction, project owner shall provide credentials for restoration contractor and all subcontractors to CPM for review and approval.

4. 30-days following completion of transmission line construction, project owner shall submit the restoration scope of work to CPM for review and approval.

5. 90-days following completion of the transmission line, the project owner shall submit to CPM for review and approval restoration plans, including measured drawings that, at a minimum, include structural work, exterior restoration, interior elevations, and mechanical/electrical/plumbing diagrams.

6. 30-days prior to the on-line date of the power plant, project owner shall submit narrative work plan to the CPM for review and approval.

7. Prior to the on-line date of the power plant, project owner shall submit evidence work has begun on restoration project and the adobe is ready for a site visit by the CPM.

8. Project owner shall notify the CPM upon completion of each phase of the project that the work is ready for a progress inspection by the CPM.

9. Project owner shall submit monthly progress reports to the CPM for review and approval until final completion of restoration work, or not-to-exceed amount is reached.

10. Project owner shall notify the CPM that adobe restoration is complete 30-days after completion of each major phase of restoration work, and call for CPM inspection and approval of work.

CUL-11 RESTORATION OF SHARP-THILLE HISTORIC GARDENS

The project owner shall fund the preservation plan, project design, and landscape restoration of the Sharp-Thille Victorian Garden according to the U.S. Secretary of the Interior Standards for Rehabilitation.

1. Prior to the start of transmission line construction, project owner shall execute a contract with the Sharp-Thille Company indicating that the project owner will provide funds to the Sharp-Thille Company for the purpose of completing the restoration of the Sharp-Thille Historic Gardens.

2. Restoration shall be based on qualified staff recommendations meeting the necessary professional qualifications and Sharp-Thille Company's programmatic needs.

3. Deliverables shall include historic landscape report, and historic restoration plan and shall follow the procedures outlined in *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (Page 1998).

4. Landscape Architect must demonstrate a minimum of 10-years of experience working on designed historic landscape restoration projects. Project experience must demonstrate familiarity with the Victorian Period and Italianate style architecture and gardens.

5. Final design shall be subject to review and comment by the Sharp-Thille Company Board of Directors and the Ventura County Cultural Heritage Board and review and approval by the CPM.

6. Plans shall demonstrate compliance with the Secretary of the Interior Standards for Rehabilitation, subject to CPM review and approval.

7. Character defining features of the historic garden landscape, including boxwood shrubs shall be retained and preserved.

8. Monthly progress reports shall include updates to scope of work; schedule for completion of the restoration project and any anticipated delays or cost overruns; any subcontractors involved and their credentials.

9. Garden restoration shall include landscaping on all sides of the main residence – north, west, south, and east to a minimum of 100-feet, measured from the exterior walls of the main residence.

Verification:

1. 30-days prior to the start of transmission line construction, project owner shall submit estimates for scope of work provided by the Sharp-Thille Company to design and restore the historic garden on company property.

2. 90-days after start of construction of transmission line, project owner shall submit credentials for landscape architect to CPM for review and approval.

3. 90-days after start of construction of transmission line, project owner shall submit credentials for architectural historian to CPM for review and approval.

4. Project owner shall submit monthly progress reports to CPM for review and approval until final scope of work is complete.

5. 30-days prior to completion of transmission line construction, project owner shall submit CPM garden restoration project schedule to CPM for review and approval.

6. Project owner shall submit monthly progress reports to CPM for review and approval until garden restoration is complete.

7. 30-days prior to completion of garden restoration, project owner shall notify CPM that garden restoration is complete and ready for CPM inspection and approval of work.

CUL-12 HISTORIC INTREPETATION OF FARMWORKERS IN THE SANTA CLARA RIVER VALLEY

The project owner shall make a contribution to the Agricultural Museum, a satellite branch of the Ventura County Museum, sufficient to complete an interpretative exhibit on the history of agricultural workers in the Santa Clara River Valley.

1. Exhibit shall focus on the history of Limoneira Ranch and the workers' families who lived in company housing. Exhibit will describe in detail, the company housing accommodations, the community who lived in company housing, the day-to-day struggles, and the racial tensions of the period.

2. Exhibit shall include family and industry photos, artifacts such as objects used in homes, handcrafted dolls, a recreation of the interior of one of the farm labor houses, and tools.

3. Exhibit shall include oral history interviews with past residents of company housing.

4. Progress Reports shall include updates to scope of the exhibit; schedule for competition of the exhibit and any anticipated delays or cost overruns;

any subcontractors involved and their credentials; and the final plan for exhibit outreach strategy.

Verification:

1. Within 30-days of project certification date, project owner shall submit museum exhibit proposal, including scope of work and budget, from the Ventura County Museum to CPM for review and approval.

2. Within 90-days of project certification date, project owner shall submit evidence of transfer of funds to Ventura County Museum for the amount specified by the museum to perform the scope of work included in museum proposal to the CPM for review and approval.

3. Project owner shall submit monthly progress reports to CPM for review and approval until exhibit and outreach strategy is complete.

CUL-13 HERITAGE VALLEY SIGNAGE RESTORATION

The project owner shall provide funds to the Heritage Valley Tourism Bureau for the purpose of restoring two signs celebrating the historical significance of the Santa Clara River Valley.

1. Sign restoration contractor shall be selected by the Heritage Valley Tourism Bureau.

2. Heritage Valley Tourism Bureau shall be responsible for managing restoration contractor, providing access to existing signs, and ensuring compliance with all applicable LORS; including securing all necessary permits.

Verification

1. Within 90-days of project certification date, project owner shall provide a letter from the Heritage Valley Tourism Bureau that includes the contractor selected, the contractor estimate, and scope of work for signage restoration to CPM for review and approval.

2. Within 120-days of project certification date, project owner shall submit evidence of transfer of funds to the Heritage Valley Tourism Bureau for the purpose of completing the work specified by the Heritage Valley Tourism Bureau.

3. Prior to start of construction, project owner shall submit proposed sign design to CPM for review and comment.

4. Within 120-days of project on-line date, project owner shall provide CPM evidence of completion of work and final sign-off by the Heritage Valley Tourism Bureau.

CUL-14 VEGETATION MANAGEMENT PLAN/TREE PROTECTION PLAN

The project owner shall prepare a Vegetation Management Plan and Tree Protection Plan to ensure all historic tree rows, and remaining elements of former intact tree rows, are protected throughout construction and operation of the project. If damage or alteration cannot be feasibly avoided, the project owner shall compensate for the impact to damaged trees on a 2-to-1 basis by implementation of the provisions in **CUL-9.**

1. Project Owner shall retain a certified arborist to prepare a Vegetation Management Plan and Tree Protection Plan.

2. Arborist shall have a minimum of 10-years of experience working as a certified arborist. Arborist shall have field experience in mitigation, monitoring, and reporting on at least five infrastructure projects of similar size and complexity to the proposed project.

3. Tree Protection Plan shall include site plans for:
   a. All horizontal drilling locations;
   b. All ground disturbance within 500-feet of contributing trees or historic tree rows;
   c. Transmission line between pole number 1 and pole number 30.

4. Site plans shall indicate the extent of tree removal and trimming required for pole and generator tie-line installation and maintenance;

5. Site plans shall indicate the extent of ground disturbance relative to the drip-line of contributing trees or historic tree rows.

6. Elevation plans shall indicate the extent of tree removal and trimming required for pole and generator tie-line installation and maintenance;

7. If any trees are identified to be removed or altered along Ellsworth Barranca, north of Telegraph Road, trees shall be replanted on a 2-1 basis near Ellsworth Barranca, in the area immediately north of Telegraph Road, pursuant to Condition of Certification **VIS-2**. Trees between Telegraph Road and Foothill Road shall be planted in a manner that would not result in future interference with the generator tie-line.

8. All contributing tree row shall be mitigated on a 2-to-1 basis pursuant to **CUL-9**.

Verification

1. Submit arborist's qualifications at least 120-days prior to start of transmission line construction to CPM for review and approval pursuant to **CUL-9**.

2. Submit Vegetation Management Plan and Tree Protection Plan 90-days prior to start of transmission line, gas line, or water line construction to CPM for review and approval.

3. Submit monthly status reports to CPM for review and approval throughout construction of the generator tie-line.

4. Monthly progress reports shall include updates to scope of work, schedule for all vegetation management work and any anticipated delays.

5. All tree removals and alterations identified in the tree protection plan shall be subject to CPM review and approval.

6. Location and quantity of trees planted pursuant to **CUL-9** shall be submitted a minimum of 30-days prior to replanting to CPM for review and approval.

CUL-15 FLAG AND AVOID

The project owner shall avoid impacts to archaeological site DS-S-01 by:

1. Ensuring that all equipment, including vehicles, remain on the access roads;

2. Ensuring that a CRS or alternate CRS re-establish and flag the boundaries of DS-S-01 and add a minimum buffer of 5 feet around the boundary of the site;

3. Ensuring that a CRM enforces avoidance of the flagged areas during installation of transmission line pole 18, and monitors any disturbance by vehicles or personnel.

Verification:

1. At least 24-hours prior to the start of installation of generator tie-line pole 18, or any additional unanticipated activities by the project owner in the vicinity of this area, the project owner shall ensure that the CRS or alternate CRS establishes the temporary site markers and that they are visible and in place on a daily basis during work in the area of the transmission structure. The status of these boundary markers will be reported in the daily and weekly monitoring summary report and will be accompanied by pictures.

REFERENCES

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CULTURAL RESOURCES ABBREVIATION AND ACRONYM GLOSSARY

AB 52	Assembly Bill 52
ACC	air-cooled condenser
ACHP	Advisory Council on Historic Preservation
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
asl	above sea level
bgs	below ground surface
Cal. Codes Regs.	California Code of Regulations
CCC	California Coastal Commission
CCGT	combined-cycle gas turbine
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
C.F.R.	Code of Federal Regulations
CHRIS	California Historical Resources Information System
COE	Corps of Engineers, U.S. Army
Conditions	conditions of certification
CRHR	California Register of Historical Resources
CPM	Compliance Project Manager
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DPR	Department of Parks and Recreation (State of California)

DPR 523	Department of Parks and Recreation cultural resources recordation form
E.O.	Executive Order (presidential)
° F	degrees Fahrenheit
FSA	Final Staff Assessment
gal	gallon(s)
GLO	General Land Office
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HDP	Heritage Documentation Programs
HRSG	heat recovery steam generator
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
MRS	Marine Research Specialists
NAHC	Native American Heritage Commission
NAM	Native American Monitor
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PAA	Project Area of Analysis
PCH	Pacific Coast Highway (State Route 1)
PSA	Preliminary Staff Assessment
SCCIC	South Central Coastal Information Center
SCVRHD	Santa Clara Valley Rural Historic District

SHL	State Historical Landmark
SHPO	State Historic Preservation Officer
SOI	Secretary of the Interior
SST	sea surface temperature
Staff	Energy Commission cultural resources technical staff
STG	steam turbine generator
TCP	traditional cultural property
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

CULTURAL RESOURCES APPENDIX CR-1
BACKGROUND INFORMATION NOT INCLUDED IN THE PSA

The following information in this Appendix is intended to provide the reader more context for understanding the PSA Cultural Resources section.

ENVIRONMENTAL SETTING

Overview

As explained in the AFC, the proposed Mission Rock site of electric generation, the gas and water pipelines, and portions of the generator tie-line (towers 1-24) are located in the Santa Clara River valley, bounded on the south by South Mountains and the north by the Sulphur Mountains.

The applicant characterizes the climate of this region as "hot temperatures, sub-humid conditions, and mean annual precipitation 12 to 18 inches with frequent summer fog. The mean annual temperature ranges from 56°F to 60°F. The mean annual freeze-free period is about 300 to 350 days" (McGinley 2009a in CAL 2015a:5.2-2).

The portion of the generator tie-line not on the valley floor (towers 25-38) is situated in the Sulphur Mountains. The climate in this area is characterized by hot temperatures, sub-humid conditions, and a mean annual precipitation of 18 to 30 inches. The mean annual temperature ranges from 45°F to 60°F (McGinley 2009b in CAL 2015a:5.2-2).

Paleoclimate and Ecology

Staff summarizes the paleoclimate and ecology descriptions provided by the applicant and adds some project-specific information below. The Santa Clara River is a remnant of what was likely a much larger river system, the remnants of which are preserved under the Oxnard Plain (Weber et al. 1973:1). Throughout the Holocene and the preceding Pleistocene, the sea level on the California Coast fluctuated significantly and in turn, affected the local environment. In fact, during the late Quaternary, about 100,000 to 400,000 years ago, the entire Oxnard Plain and Santa Clara River Valley were part of an inland sea (Weber et al. 1973:35). The paleoclimatic studies conducted by Masters and Aiello (2007) and Peltier (2002) yield an understanding of the project vicinity's changing landscape and ecology during the span of human habitation. An accurate picture of paleoclimate and ecology provides explanations for and expectations of the range of cultural resources in the project vicinity.

At the transition from the Pleistocene Epoch's[8] Last Glacial Maximum (LGM) to the Holocene Epoch[9], mean sea level was significantly lower than present levels. At the LGM 20,000 years ago, sea level was about 400 feet lower.

[8] The interval of time (epoch) spanning 2.588 million years ago–11,700 B.P. (Cohen et al. 2013).

[9] The Holocene Epoch is the interval from 11,700 B.P. to the present day (Cohen et al. 2013). Geoscientists divide the Holocene Epoch into three broad divisions: Early (11,500–7550 B.P.), Middle (7000–4000 B.P.), and Late (4000 B.P.–present) (see Meyer et al. 2009:ii; West et al. 2007:20–21). This PSA follows Meyer et al. (2009).

The Channel Islands were larger and closer to the mainland during the LGM–Holocene transition as well: at 12,000 B.P., Santa Cruz Island was approximately 10 miles off the coast of what is now Oxnard; two thousand years later, rising sea level increased that distance to 15 miles (Porcasi et al. 1999: **Figure 1**). Additionally, under the relatively rapid sea level rise that occurred since the LGM, the dominant geomorphic process shifted from erosion to deposition, with finer sediments deposited in bays and estuaries formed at the mouths of coastal canyons rather than along the coastline (Graham et al. 2003:35-36).

Deep, well-circulated estuaries that supported fish nurseries, shellfish, shorebirds, and marine mammals characterized the coast between 10,000 and 8,200 years ago when sea level was about 35 meters below present sea level. Beaches lacked sand and shallow rocky reefs, which were productive fish habitats, were widespread (Masters and Aiello 2007: 40).

One of the impacts of intense El Niño/Southern Oscillation (ENSO) events 6,000 to 5,000 years ago was increased sediment in tidal areas. Estuaries became shoaled and less productive, and sand and mud flats expanded which marked the transition to infaunal ecosystems (Graham et al. 2003: 36; Masters and Aiello 2007: 40).

The large estuaries that formed during the earlier period were replaced with shallow wetlands and lagoons during the Late Holocene. During major drought episodes these estuaries would often close because the inland rivers were unable to break the sand barrier to the coast, thus resulting in hypersaline conditions and decreased productivity in the lagoons.

The wet winter/dry summer climate of Southern California is thought to have persisted for as many as 160,000 years (Masters and Aiello 2007:40). Late Pleistocene/Early Holocene (ca. 14,000–7550 B.P.) annual precipitation appears to have been similar to twenty-first century conditions. The project vicinity appears to have experienced bimodal precipitation patterns, with precipitation occurring during summer and winter months.

NATIVE PLANTS AND ANIMALS IN THE PROJECT VICINITY

The AFC describes the current suite of plants and animals of the project vicinity, with an emphasis on special-status species and sensitive ecological communities (CAL 2015a: 5.2-1 – 5.2-32). The ecoregion most closely associated with the proposed Mission Rock project area, natural gas pipeline, process water line, and portions of the generator tie-line is the Oxnard Plain-Santa Paula Valley subsection of the Southern California Coast Ecological section. The remaining portions of the generator tie-line are situated in the Santa Ynez-Sulphur Mountains subsection of the Southern California Coast Ecological Section (USDA 1997). The vegetation communities that were present during prehistoric times and those that would have been available to Native Americans in the project vicinity are listed here with some indigenous species that typically occur in the respective ecoregions.

Oxnard Plain-Santa Paula Valley subsection

- Saltmarshs – Some of the species associated with this habitat include plants in the Cordgrass series, e.g., Dodder (*Cuscuta salina*), Saltgrass (*Distichlis spicata*), Alkali heath (*Frankenia salina*), Pickleweeds (*Salicornia* spp.), Common pickleweed (*Salicornia virginica*), Cordgrasses (*Spartina*), Saltwater cordgrass (*Spartina alterniflora*), Dense-flowered cordgrass (*Spartina foliosa*), Alkali sacaton (*Sporobolus airoides*), Arrow-grasses (*Triglochin* spp.), the Ditch-grass series, e.g., Hornworts (*Ceratophyllum* spp.), Milfoils (*Myriophyllum* spp.), Common water-nymph (*Najas guadalupensis*), Leafy pondweed (*Potamogeton foliosus*), Ditch-grasses (*Ruppia* spp.), Bladderwort (*Utricularia vulgaris*), Horned-pondweed (*Zannichellia palustris*), and the Pickelweed series, e.g., Fat-hen (*Atriplex patula*), Saltwort (*Batis maritime*), Gumplant (*Grindelia stricta*), Jaumea (*Jamuea carnosa*), Sea-lavender (*Limonium californicum*), Bigelow pickleweed (*Salcornia bigelovii*), Bulrushes (*Scirpus*), Sea-blite (*Suadea californica*) (CNPS 2017, USDA 1997).
- Grasslands – Some of the species associated with this habitat include plants in the California annual grassland series, e.g., European hairgrass (*Aira caryophyllea*), Oats (*Avena* spp.), Slender wild oats (*Avena barbata*), Wild oats (*Avena fatua*), Mustards (*Brassica* spp.), Bromes (*Bromes* spp.), Ripgut (*Bromus diandrus*), Soft chess (*Bromus hordeaceus*), Foxtail chess (*Bromus madritensis*), Owl's-clovers (*Castilleja* spp.), Purple owl's-clovers (*Castilleja exserta*), Star thistles (*Centaurea* spp.), Dogtail (*Cynosurus echinatus*), Filaree (*Erodium* spp.), Storkbill (*Erodium botrys*), California poppy (*Eschscholzia californica*), Goldfields (*Lasthenia* spp.), Burke goldfields (*Lasthenia burkei*), Ryegrass (*Lolium* spp.), Lupines (*Lupinus* spp.), Butter-and-eggs (*Triphysaria eriantha*), Rattail fescue (*Vulpia hirsute*) (CNPS 2017, USDA 1997).
- Shrublands – Some of the species associated with this habitat include plants in the Black sage series, e.g., California sagebrush (*Artemisia californica*), Coyote brush (*Baccharis pilularis*), California encelia (*Encelia californica*), Buckwheats (*Eriogonum*), Ash buckwheat (*Eriogonum cinereum*), Algodones buckwheat (*Eriogonu fasciculatum*), Chaparral mallow (*Malacothamnus fasciculatum*), Laurel sumac (*Malosma laurina*), Coast prickly-pear (*Opuntia littoralis*), White sage (*Salvia apiana*), Black sage (*Salvia mellifera*), Chaparral yucca (*Yucca whipplei*), the California Buckwheat series, e.g., Big sagebrush (*Artemisia tridentate*), California encelia (*Encelia californica*), Brittlebush (*Encelia farinosa*), Coast goldenbush (*Isocoma menziesii*), Deer weed (*Lotus scoparius*), Bush monkeyflower (*Mimulus aurantiacus*), Phacelia (*Phacelia ramosissima*), Lemonade berry (*Rhus integrifolia*), California figwort (*Scrophularia californica*), the California sagebrush series, e.g., Chamis (*Adenostoma fasciculatum*), Bush-penstemon (*Keckiella cordifolia*), Purple sage (*Salvia leucophylla*), Mexican elderberry (*Sambucus Mexicana*), Posion-oak (*Toxicodendron diversilobum*), the Coyote brush series, e.g., Yellow sand-verbena (*Abronia latifolia*), Beach bursage (*Ambrosia chamissonis*), European beachgrass (*Ammophila arenaria*), Tufted hairgrass (*Deschampsia cespitosa*), Seaside woolly-sunflower (*Eriophyllum stoechadifolium*), Salal (*Gaultheria shallon*), Creeping ryegrass (*Leymus triticoides*), Yellow bush lupine (*Lupinus arboreus*),

Wax-myrtle (*Myrica californica*), Sword fern (*Polystichum mnitum*), California coffeeberry (*Rhamnus californica*), California blackberry (*Rubus ursinus*) (CNPS 2017, USDA 1997).

- Forests and woodlands – Some of the species associated with this habitat include plants in the California sycamore series, e.g., White alder (*Alnus rhombifolia*), Slender wild oats (*Avena barbata*), Mulefat (*Baccharis salicifolia*), Soft chess (*Bromus hordeaceus*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), Coast live oak (*Quercus agrifolia*), Valley oak (*Quercus lobata*), Black willow (*Salix goodingii*), Red willow (*Salix laevigata*), Arroyo willow (*Salix lasiolepsis*), Shinning willow (*Salix lucida ssp. caudata*), Yellow willow (*Salix lutea*), California bay (*Umbellularia californica*), and the Coast live oak series, e.g., Bigleaf maple (*Acer macrophyllum*), Box elder (*Acer negundo*), Chamise (*Adenostoma fasciculatum*), Madrone (*Arbutus menziesii*), California sagebrush (*Artemisia californica*), Hairyleaf ceanothus (*Ceanothus oliganthus*), Hazel (*Corylus cornuta*), Toyon (*Heteromeles arbutifolia*), Ocean spray (*Holodiscus discolor*), Laurel sumac (*Malosma laurina*), Bracken (*Pteridium aquilinum*) (CNPS 2017, USDA 1997).

Santa Ynez- Sulphur Mountains subsection

- Dunelands – Some of the species associated with this habitat include plants in the Sand-verbena – beach bursage series, e.g., Red fir (*Abies magnifica var. magnifica*), Sand-verbena (*Abronia* spp.), Yellow sand-verbena (*Abronia latifolia*), Pink sand-verbena (*Abornia fasciculatum*), Chamise (*Adenostoma fasciculatum*), Beach bursage (*Ambrosia chamissonis*), European beachgrass (*Ammophila arenaria*), Dune sagebrush (*Artemisia pycnocephala*), Coyote brush (*Baccharis pilularis*), Beach morning glory (*Calystegia soldanella*), Sun cups (*Camissonia cheiranthifolia*), Sedges (*Carex*), Sea-fig (*Carpobrotus chinensis*), California croton (*Croton califonricus*), Saltgrass (*Distichlis spicata*), Heather goldenbush (*Ericamerica ericoides*), Buckwheats (*Eriogonum*), Algondones buckwheat (*Eriogonum deserticola*), Dune buckwheat (*Eriogonum latifolium*), Seaside woolly-sunflower (*Eriophyllum stoechadifolium*), Humboldt Bay wallflower (*Erysimum menziesiiI*), Beach pea (*Lathyrus littoralis*), Beach layia (*Layia carnosa*), Native dunegrass (*Leymus mollis*), Yellow bush lupine (*Lupinus arboreus*), Dune lupine (*Lupinus chamissonis*), Seashore bluegrass (*Poa douglasii*), Hooker willow (*Salix hookeriana*), and in the Dune lupine-goldenbush series, e.g., California sagebrush (*Artemisia californica*), California ephedra (*Ephedra californica*), Coast goldenbush (*Isocoma menziesii*), Coast prickly-pear (*Opuntia littoralis*), Lemonade berry (*Rhus integrifolia*) (CNPS 2017, USDA 1997).

- Grasslands - Some of the species associated with this habitat include plants in the California annual grassland series, e.g., European hairgrass (*Aira caryophyllea*), Oats (*Avena* spp.), Slender wild oats (*Avena barbata*), Wild oats (*Avena fatua*), Mustards (*Brassica* spp.), Bromes (*Bromes* spp.), Ripgut (*Bromus diandrus*), Soft chess (*Bromus hordeaceus*), Foxtail chess (*Bromus madritensis*), Owl's-clovers (*Castilleja* spp.), Purple owl's-clovers (*Castilleja exserta*), Star thistles (*Centaurea* spp.), Dogtail (*Cynosurus echinatus*), Filaree (*Erodium* spp.), Storkbill (*Erodium botrys*), California poppy (*Eschscholzia californica*), Goldfields (*Lasthenia* spp.),

Burke goldfields (*Lasthenia burkei*), Ryegrass (*Lolium* spp.), Lupines (*Lupinus* spp.), Butter-and-eggs (*Triphysaria eriantha*), Rattail fescue (*Vulpia hirsute*), and in the Purple needlegrass series, e.g., Slender wild oats (*Avena barbata*), Wild oats (*Avena fatua*), Ripgut (*Bromus diandrus*), Soft chess (*Bromus hordeaceus*), Foxtail chess (*Bromus madritensis*), Blue wildrye (*Elymus glaucus*), California fescue (*Festuca californica*), Junegrass (*Koeleria macrantha*), Italian ryegrass (*Lolium multiflorum*), California melic (*Melica californica*), Oniongrass (*Melica imperfecta*), One-sided bluegrass (*Poa secunda*), Purple sanicle (*Sanicula bipinnatifida*), Nodding needlegrass (*Stipa cernua*), Foothill needlegrass (*Stipa lepida*), Purple needlegrass (*Stipa pulchra*) (CNPS 2017, USDA 1997).

- Shrublands – Some of the species associated with this habitat include plants in the Black sage series, e.g., California sagebrush (*Artemisia californica*), Coyote brush (*Baccharis pilularis*), California encelia (*Encelia californica*), Buckwheats (*Eriogonum*), Ash buckwheat (*Eriogonum cinereum*), Algodones buckwheat (*Eriogonu fasciculatum*), Chaparral mallow (*Malacothamnus fasciculatum*), Laurel sumac (*Malosma laurina*), Coast prickly-pear (*Opuntia littoralis*), White sage (*Salvia apiana*), Black sage (*Salvia mellifera*), Chaparral yucca (*Yucca whipplei*), the California Buckwheat series, e.g., Big sagebrush (*Artemisia tridentate*), California encelia (*Encelia californica*), Brittlebush (*Encelia farinosa*), Coast goldenbush (*Isocoma menziesii*), Deer weed (*Lotus scoparius*), Bush monkeyflower (*Mimulus aurantiacus*), Phacelia (*Phacelia ramosissima*), Lemonade berry (*Rhus integrifolia*), California figwort (*Scrophularia californica*), the California sagebrush series, e.g., Chamis (*Adenostoma fasciculatum*), Bush-penstemon (*Keckiella cordifolia*), Purple sage (*Salvia leucophylla*), Mexican elderberry (*Sambucus Mexicana*), Posion-oak (*Toxicodendron diversilobum*), the Coyote brush series, e.g., Yellow sand-verbena (*Abronia latifolia*), Beach bursage (*Ambrosia chamissonis*), European beachgrass (*Ammophila arenaria*), Tufted hairgrass (*Deschampsia cespitosa*), Seaside woolly-sunflower (*Eriophyllum stoechadifolium*), Salal (*Gaultheria shallon*), Creeping ryegrass (*Leymus triticoides*), Yellow bush lupine (*Lupinus arboreus*), Wax-myrtle (*Myrica californica*), Sword fern (*Polystichum mnitum*), California coffeeberry (*Rhamnus californica*), California blackberry (*Rubus ursinus*), the Bigberry manzanita series, e.g., Chamise (*Adenostoma fasciculatum*), Eastwood manzanita (*Arctostaphylos glandulosa*), Bigberry manzanita (*Arctostaphylos glauca*), Wedgeleaf ceanothus (*Ceanothus cuneatus*), Chaparral whitethorn (*Ceanothus leucodermis*), Birchleaf mountain-mahogany (*Cercocarpus betuloides*), Scrub oak (*Quercus berberidifolia*), Interior live oak (*Quercus wislizenii*), Hollyleaf redberry (*Rhamnus ilicifolia*), the Bigpod ceanothus series, e.g., Bigpod ceanothus (*Ceanothus megacarpus*), Toyon (*Heteromeles arbutifolia*), Scrub oak (*Quercus berberidifolia*), the Bigpod ceanothus – chamise series, the Bigpod ceanothus – hollyleaf redberry series, California sagebrush - purple sage series, the Chamise series, e.g., Red shank (*Adenostoma sparsifolium*), Manzanitas (*Arctostaphylos* spp.), Whiteleaf manzanita (*Arctostaphylos viscida*), Hoaryleaf ceanothus (*Ceanothus crassifolius*), Desert ceanothus (*Ceanothus greggii*), Woollyleaf ceanothus (*Ceanothus tomentosus*), the Chamise - bigberry manzanita series, the Chamise – black sage series, the Chamise- eastwood manzanita series, the

Greenbark ceanothus series, the Mixed sage series, the Mixed scrub oak series, e.g, California buckeye (*Aesculus californica*), Madrone (*Arbutus menziesii*), Tall-oatgrass (*Arrhenatherum elatius*), Firecracker flower (*Dichelostemma ida-maia*), Ponderosa pine (*Pinus ponderosa*), Foothill pine (*Pinus sabiniana*), Doughlas-fir (*Pseudotsuga menziesii*), Coast live oak (*Quercus agrifolia*), Blue oak (*Quercus douglasii*), Oregon white oak (*Quercus garryana*), Valley oak (*Quercus kelloggii*), the Purple sage series, the Scrub oak series, the Scrub oak – chamise series, and the White sage series(CNPS 2017, USDA 1997).

- Forest and woodlands – Some of the species associated with this habitat include plants in the Bishop pine series, the California bay series, e.g., Madrone (*Arbutus menziesii*), Coast silktassel (*Garrya elliptica*), Tanoak (*Lithocarpus densiflora*), Coast live oak (*Quercus agrifolia*), Canyon live oak (*Quercus chrysolepis*), Interior live oak (*Quercus wislizenii*), California bay (*Umbellularia californica*), the California walnut series, e.g., Foothill ash (*Fraxinus dipetala*), California walnut (*Juglans californica var. californica*), Mexican elderberry (*Sambucus mexicana*), the Canyon live oak series, e.g., White fir (*Abies concolor*), Bigleaf maple (*Acer macrophyllum*), Indian manzanita (*Arctostaphylos mewukka*), Incense-cedar (*Calocedrus decurrens*), Deerbrush (*Ceanothus integerrimus*), Goldenback fern (*Pentagramma triangularis*), Coulter pine (*Pinus coulteri*), Sugar pine (*Pinus lambertiana*), Ponderosa pine (*Pinus ponderosa*), Narrowleaf sword fern (*Polystichum imbricans*), Bigcone Douglas-fir (*Pseudotsuga macrocarpa*), Douglas-fir (*Pseudotsuga menziesii*), Black oak (*Quercus kelloggii*), Blackberry (*Rubus* spp.), Lemon catchfly (*Silen lemmonii*), the Coast live oak series, e.g., Box elder (*Acer negundo*), Chamise (*Adenostoma fasciculatum*), Hazel (*Corylus cornuta*), Toyon (*Heteromeles arbutifolia*), Ocean spray (*Holodiscus discolor*), Laurel sumac (*Malosma laurina*), Bracken (*Pteridium aquilinum*), Scrub oak (*Quercus berberidifolia*), Engelmann oak (*Quercus engelmannii*), California coffeeberry (*Rhamnus californica*), Black sage (*Salvia mellifera*), Common snowberry (*Symphoricarpos albus*), and the Tanoak series (CPNS 1997, USDA 1997)

Other Local Fauna

Several animals frequent the ecoregions associated with the Mission Rock ethnographic PAA. Along the coast and Channel Islands shellfish can be found such as; Abalones (*Haliotis* spp.), Bean clams (*Donax gouldii*), Black turban snails (*Chlorostoma funebralis*), mussels (*Mylitus californianus*), Littleneck clams (*Leukoma staminea*), Olive snail (*Callianax biplicata*), Pismo clam (*Tivela stultorum*), Thick scallop (*Argopecten ventricosus*), and Venus clams (*Chione* spp.). The coast also provided the opportunity to exploit pelagic fishes such as Swordfish (*Xiphias gladius*), Anchovies (*Engraulididae* spp.), Chub mackerel (*Scomber japonicas*), Pacific bonito (*Sarda chiliensis*), Leopard shark (*Triakis semifasciata*), Pacific angel shark (*Squatina califonrica*), Pacific barracuda (*Sphyraena argentea*), Pacific sardine (*Sardinops sagax*), Shovelnose guitarfish (*Rhinobatos productus*), Soupfin shark (*Galeorhinus galeus*), and Yellowtail (*Seriola lalandi*). Nearshore fishes exploited by the Chumash include Cabezon (*Scorpaenichthys marmoratus*), California sheephead (*Semicossyphus pulcher*), Surfperch (*Embiotocidae* spp.), rockfishes (*Sebastes* spp.),

Kelp bass (*Paralabrax clathratus*), Bat ray (*Myliobatis californica*), Soupfin shark (*Galeorhinus galeus*), and the Pacific Sardine (*Sardinops sagax*) (Lightfoot and Parrish 2009:270-273).

Freshwater fish that could potentially be found in nearby rivers include Rainbow trout/steelhead (*Oncorhyncus mykiss*), as well as birds such as Common loon (*Gavia immer*), Green-winged teal (*Anas crecca*), Cinnamon teal (*Anas cyanoptera*), Ruddy duck (*Oxyura jamaicensis*), American coot (*Fulica Americana*), Mallard (*Anas platyrynchos*), and White-winged scoter (*Melanitta fusca*). Common insects used by Native Americans in the area include aphids, caterpillars, grasshoppers, harvester ants, and yellowjacket larvae. The California quail (*Callipepia californica*) and various raptor birds of prey, e.g., Golden eagle (*Aquila chrysaetos*), condor (*Gymnogyps californianus),* and red-tailed hawk (*Buteo jamaicensis*), are important terrestrial birds (Lightfoot and Parrish 2009: 272- 275).

Marine mammals were an important resource for Chumash living near the coast. Typical species include sea lions (e.g., *Callorhinus ursinus*, *Zalophus californicus,* and *Arctocephalus townsendi*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens),* Common dolphin (*Delphinus delphis*), Bottlenose dolphin (*Tursiops truncate*), Gray whale (*Eschrichtius robustus*), Harbor seal (*Phoca vitulina*), Northern elephant seal (*Mirounga angustirostris*), and Sea otter (*Enhydra lutris*). Land mammals were also critical to prehistoric populations, such as ground squirrels (*Spermophilus* spp.), black-tailed jackrabbit (*Lepus californicus*), Desert cottontail (*Sylvilagus auduboni*), mule deer(*Odeocoileus hemionus*), woodrats (*Neotoma* spp.) (Lightfoot and Parrish 2009: 275-277).

GEOLOGY

The geology of the project vicinity is described in several sections of the AFC (CAL 2015a: 5.4, 5.8, and 5.11). These discussions are not reproduced in full here, but a discussion of geological characteristics relevant to this preliminary staff assessment's (PSA's) cultural resources analysis follow.

Geomorphology

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

The project vicinity is located in the Ventura Basin of the Transverse Ranges geomorphic province of Southern California. The PAA are in Santa Clara River Valley, which is largely comprised of unconsolidated, Holocene-aged alluvium overlying bedrock. Most of these alluvial sediments were brought to the area by the Santa Clara River, and the rest came from creeks and barrancas in the Sulphur Mountains to the north. The Valley "is the surface expression of a deep synclinal trough into which an enormous thickness of Plio-Pleistocene sediments were deposited with contemporaneous folding.

The limbs of the Santa Clara Syncline are truncated and overturned by the San Cayetano Fault on the north and the Oak Ridge Fault on the south (CAL 2015a: 5.4-1).

Based on the geomorphology, and the depositional impacts of the Saint Francis Dam flood in 1923 the proposed site of electrical generation “possess high archaeological sensitivity at depth” (Lawson et al. 2015: 7). The area of high archaeological sensitivity also applies to the transmission line, natural gas pipeline (both routes A and B), and the water supply line which all extend west from the project area for about 1.5 miles.

PREHISTORIC SETTING

Archaeological sites in the region around the proposed Mission Rock project area have produced some of the earliest dates of human occupation in California.The Northern Channel Islands are in close proximity to the Ventura coast and were even closer when sea levels were lower in the past. Materials recovered at Arlington Springs on Santa Rosa Island date to ca. 13,000 B.P., and dates from Daisy Cave on San Miguel Island indicate human occupation ca. 10,000 B.P. On the mainland, the earliest dates in the area are ca. 10,725 B.P. from the Sudden Flats site near Pt. Arguello (Lebow et al. 2015), and ca. 10,000-9,500 B.P. from the Surf site near the mouth of the Santa Ynez River (Glassow et al. (2007:191-192). Other early sites in California include the Borax Lake site which dates to ca. 10,000 to 12,000 B.P. based on the presence of fluted points and associated obsidian hydration measurements (Barnes 2007:11), the Diablo Canyon site which dates to ca 9320 B.P. (Moratto 2004: 107), and CA-SCr-177 in Scotts Valley which dated to ca. 10,080 (Moratto 2004:109). The evidence from this early period (also called the Paleo-Coastal Tradition) is sparse and it is difficult to make many definitive conclusions regarding the economy and social structure of these early Californians, other than that they collected shellfish and made flaked tone tools of local chert.

Some researchers claim that human occupation in California began earlier than 13,000 B.P., based on the analysis of spurious and ambiguous sites. The difficulty in confirming sites of such antiquity is primarily a result of problems in excavation methodology and issues of preservation. For example, fossilized human skull fragments were discovered in 1936 near Baldwin Hills in the same stratigraphic layer and with similar fluorine content as a mammoth, suggesting they may be of the same age. A radiocarbon sample from a small bit of collagen suggested that the skull dated to 23,600 B.P., but this is not considered a reliable sample due to its small size (Moratto 2004: 53). In the 1960s Dr. Louis Leakey and the archaeologists working with him at the Calico Early Man Site found ecofacts in strata that dated to 200,000 B.P. These claims were never fully accepted by the archaeological community, primarily because of disagreement regarding the dating of the strata and an unconfirmed presence of human activity in the strata (Duvall and Venner 1979:1). More recently, paleontologists working at the Cerutti Mastodon site near San Diego have argued that the mastodon bones which date to 130,000 B.P. were broken open by human-made tools that were found *in situ* with the bones (Holen et al. 2017). While intriguing, this claim has not yet been subject to sufficient scientific scrutiny to justify changing the chronology for human habitation in California. However, there is accepted evidence for pre-13,000 B.P. human presence in the Western Hemisphere.

Most notably is the Monte Verde site in Southern Chile, which has withstood significant scientific scrutiny. The archaeologists working here discovered *in situ* artifacts dating to as early as 18,000 B.P. (Dillehay et al. 2015). It is possible a site of similar antiquity could be discovered in California, but as of now such a site has not been confirmed.

Around 8,000 B.P. California experienced an extended warm and dry period, often referred to as the Altithermal. This climactic event drastically altered the environmental resources available to prehistoric inhabitants, thus changing their subsistence efforts to focus on the procurement of plant foods supplemented with small animals. Evidence for the focus on plant foods is seen in the prevalence of metates and manos (millingstones) in archaeological deposits of this time period, and this is the earliest widespread archaeologically known occupation. These tools were used to process hard seeds into flour, and this plant-based diet was supplemented with fishing and hunting as well. The typical archaeological assemblage of sites that date to the Millingstone Period consists of millingstones, large and crudely fashioned cobble choppers and scrapers, hammerstones, fire-affected rocks often in association with millingstones, and a paucity of projectile points, other hunting tools, and faunal remains (Glassow et al. 2007:194-195).

Most of the settlements that date to the Millingstone Horizon are at or near the coast, and especially in the Santa Barbara Channel region these sites tend to be located on elevated terraces or knolls. Data from marine sediment cores suggests that sea temperature was cooler than at present which made the productivity of the marine environment higher than it is currently. This increased marine productivity likely permitted groups to live near the coast while still maintaining their subsistence efforts focused on plant foods (Glassow et al. 2007:194).

The Intermediate Period began ca. 5,000 B.P. and is marked by the transition to a hunting focused subsistence regime. Evidence for this transition is noted in the archaeological assemblages that date to this time period which contain more fish, terrestrial, and marine mammal remains than earlier periods. Flaked stone tools from this period are more diverse than preceding periods, and include such tools as large, side notched projectile points, large blades, and flaked scrapers and drills. The metates and manos of the earlier Millingstone period were still used, but refined mortars and pestles also are found, indicating a reliance on a greater variety of vegetal products, such as acorns, islay, and roots. Mortuary practices during this time period suggest a degree of achieved status differentiation, as evidenced by shell beads and ornaments (Glassow et al. 2007:197-203).

Later in the Intermediate Period technological shifts were made to include circular shell fishhooks, notched stone sinkers or net weights, and contracting stem points. Also during this time advances were made in the use of asphaultum for a variety of products. It is suggested that it was during this time period that the basic aspects of Chumash culture began to emerge, based on a comparison to ethnographic Chumash practices (Erlandson and Rick 2002:181).

Sites from this time period evidence increased sedentism as shown by the larger size of sites, higher density of artifacts and faunal remains, and floral assemblages which indicate year-round habitation (Glassow et al. 2007:202-203).

The Late Prehistoric Period is marked in particular by the introduction of the plank canoe and bow and arrow. These technological changes are reflected in significant social and political changes for the indigenous people living along the Southern California Coast, and beginning ca. 700 B.P. all major aspects of Chumash cultural systems were in place. It is also during this time period that scholars posit that the regional population reached its peak based on the presence of several large settlements along the Santa Barbara mainland coast. The plank canoe, or *tomol*, was an important development because it permitted groups to obtain large deep sea fish such as tuna and swordfish, and to efficiently trade between the Channel Islands and the coast. Archaeological assemblages that date to this time period typically contain a wealth of ornamental, ceremonial and artistic items such as marine shell and stone beads, pendants, ornaments, bowls, pestles, pipes, and stone tubes inlaid with shell beads. Projectile points included both large and small varieties, the smaller, corner – notched Cottonwood series being associated with the use of the bow and arrow (Glassow et al. 2007:205-209).

ETHNOGRAPHIC SETTING

Chumash

The Chumash people and representative tribes are the Native Americans most directly associated with the proposed project area. Traditionally, the Chumash have been split into six subgroups based on the dialects of the Chumash language spoken and named for the closest Spanish Mission to those groups: those near the Santa Barbara Mission are the Barbareño; those near the Santa Ynez Mission are the Ynezeño; those near La Purisima Concepción are the Purisimeño; those near the San Luis Obispo Mission are the Obispeño; those from the Northern Channel Islands are the Island; and near the proposed Mission Rock project area, the Ventureño named for the San Buenaventura Mission (Grant 1978a:505).

The Chumash were one of the first groups of California Native Americans that the early European explorers encountered. Juan Rodriguez Cabrillo met the Chumash on October 10, 1542 when he landed on the shores of Ventura. While exploring the mainland, coast, and Channel Islands, Cabrillo noted many of the names of settlements that they encountered. The next time the Chumash had Europeans in their midst was about 60 years later when Sebastian Vizcaino explored the Santa Barbara area. The Chumash impressed their European counterparts with their material culture and craftsmanship, and these explorers cataloged these traits in their journals including information about the appearance and activities of the Native Americans (Grant 1978a: 505).

Prior to European contact and the establishment of the Mission system, Chumash territory extended from the San Luis Obispo area down the coast to Malibu and inland as far as the western edge of the San Joaquin Valley. The name “Chumash” is derived from “*Mi’ chumash*” the name that was used by some mainland groups to refer to those Chumash from the Channel Islands.

The Spanish established the first mission in the region in 1772 at San Luis Obispo, and four other missions were built over the next 32 years: San Buenaventura, the closest to the proposed project area (1782); Santa Barbara (1786); La Purisma Concepción (1787); and Santa Ynez (1804). The recruitment and absorption of the Chumash was relatively quick, and by the early 1800s the entirety of the Chumash population was either in the mission system or had fled to the Central Valley or mountains.

Trade, Settlement Patterns, Economy, Resources and Material Culture

The Chumash were part of an extensive trade network which included the Channel Islands, the mainland coast, and extended all the way into the Great Basin and Southwest. Items traded by the Chumash included steatite, various types of wooden vessels, and beads traded to the Salinans, their neighbors to the north. Inland towards the Yokuts groups, the Chumash traded white pigment, shell beads, Pismo clam, abalone, olivella, limpet and cowrie shells, and dried sea urchin and starfish, for black pigment, antelope and elk skins, obsidian, salt, beads, seeds, and herbs. The Tubatulabal traded piñion nuts for Chumash asphaltum, shell ornaments, steatite, and fish. The Island Chumash traded chipped implements, fish-bone heads, baskets, and basaltic rock digging weights for seeds, acorns, and bows and arrows. The Kitanemuk received wooden and shell inlaid vessels from the Chumash as well (Davis 1961:29; Grant 1978b: 517).

The most important plant food source for the Chumash was the acorn. Gathered in the fall, and stored for future use, the acorn was the staple of the Chumash diet for most of the year. Other plant foods included pine nuts, wild cherry, tule, berries, mushrooms, cress, amole, and many different types of seeds. Mollusks were one of the most important maritime subsistence foods, and included the California mussel, the horse clam, the gooseneck barnacle, the jackknife clam, the Pismo clam, and abalone. Marine mammals such as seals, sea otters and porpoises were taken by harpoons from the wood plank canoes or *tomols*. Fish were taken from the sea, using seines and nets or hook and line for shallow water fish, and harpoons for larger ones. Bows and arrows were used to hunt mule deer, coyote, and fox. Wooden throwing sticks were used to kill rabbits and game birds (Grant 1978b: 517).

The Chumash did not make pottery before the Spanish arrived, relying instead on their well-made baskets and steatite vessels for storage and cooking. Steatite was also used to craft beads, medicine tubes, smoking pipes, whale effigies, and charmstones. Asphaltum was an important resource, used to attach shells to vessels as decoration, to caulk their plank canoes, sealing water baskets, and fastening arrow and spear points to shafts. Both chert and obsidian was used for crafting projectile points and other stone tools (Grant 1978b: 515).

Chumash Burial Practices

The Chumash practiced internment of the dead and typically erected a small board and pole at the grave. Trophies related to the deceased were placed on the board and pole, e.g., hooks and lines if the person was a fisherman, bow and arrow if a hunter. Whale rib bones were laid in some burials; there are reports that the rib bones were either laid across the grave or lined the grave. Bodies were tied in a flex position, and lain with the head facing west and face down. Typical grave goods included bowls, pestles, beads, weapons and charmstones. Sometimes the bowls and mortars were deliberately broken before they were placed in the grave. Some infant burials have been found that contained small canoes made of stone, bone or wood.

Lieutenant Fages, in 1775, gave a detailed account of the Chumash mourning ceremony:

> When any Indian dies, they carry the body to the adoratory, or place near the village dedicated to their idols. There they celebrate the mortuary ceremony, and watch all the following night, some of them gathered about a huge fire until daybreak; then come all the rest (men and women) and four of the begin the ceremony in this wise. One Indian smoking tobacco in a large stone pipe, goes first; he is followed by the other three, all passing thrice around the body; but each time he passes the head, his companions lift the skin with which it is covered, that the priest may blow upon it three mouthfuls of smoke. On arriving at the feet, they all four together stop to sing I know not what manner of laudation. Then come the near and remote relatives of the deceased, each one giving the chief celebrant a string of beads, something over a span in length. Then immediately there is raised a sorrowful outcry and lamentation by all the mourners. When this sort of solemn response is ended, the four ministers take the body, and all the Indians follow them singing to the cemetery (Fages 1937: 33-34 in Grant 1978b: 512).

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Acorn		ixpanis, 'ikhpanish, shipitish	Staple food	food
Agave, century plant	Agave americana			food
Amaranth, pigweed	Amaranthus spp.		seeds, leaves	food
Arroyo willow	Salix lasiolepis	khaw	wood, shoots, bark	poles for house frame, cradleboard; baskets, seed beaters; lashing, skirts, chewed as toothache remedy, tea for fever
Aster	Symphyotrichum chilense		seeds	food
Barley	Hordeum spp.		seeds	food

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Beardtongue	Penstemon spp.			
Bedstraw	Galium spp.			
Bicolored cudweed	Gnaphalium bicolor		leaves	
Bigleaf mistletoe	Phoradendron macrophyllum	shlamulasha'w		
Bigpod ceanothus	Ceanothus megacarpus	sekh	branches, flowers	digging sticks, fence posts, poles; lather for hair washing
Black cottonwood	Populus balsamifera	khwelekhwel, xwelexwel		
Blue elderberry	Sambucus mexicana	qayas	berries, flowers, wood	food; tea for coughs, cold, fever; bows, musical instruments
Blue grass	Poa spp.			
Blue oak	Quercus douglasii	tushqun, mish'kata	bark, twigs, branches	dye; to singe hair; stirrer, bows, cradleboards
Blue-eyed grass	Sisymbrium bellum	sh'ichki 'l'waqaq		
Boxelder	Acer negundo	qayas		
Bracken fern	Pteridium aquilinum	kich	whole plant	
Broad-leaved milkweed	Asclepias eriocarpa	usha'ak	stems, sap	fiber for cordage, nets; dried and chewed
Brodiaea, blue dicks	Dichelostemma pulchellum, D. capitatum	shi'q'o	bulbs	Food
Brome grass	Bromus spp.		seeds	Food
Brown dogwood, creek dogwood	Cornus glabrata, C. sericea	wiliqap		
Buckthorn	Rhamnus purshiana			
Bull mallow	Malva nicaeensis	malwash		
Bulrush, tule	Scirpus acutus	kawiyish	stems	thatching for house, sleeping mats, sacred enclosures, cradleboard padding, skirts, sandals, waterbottles
Buttercup	Ranunculus spp.			
California hedge parsley	Yabea microcarpa			
California bay, california laurel	Umbellularia californica	psha'an	leaves, burls	insect repellent, worn around head for headaches; wooden bowls
California black walnut	Juglans californica	tipk	nuts, nut shells	food; gambling dice
California blackberry	Rubus ursinus	tihi		food
California broom,	Lotus scoparius	yai	stems	

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
deerweed				
California buckeye	Aesculus californica			
California buckwheat	Eriogonum fasciculatum	tswana'atl 'ishup	stems	
California bulrush	Scirpus californicus	Kawiyish	stems	thatching for house, sleeping mats, sacred enclosures, cradleboard padding, skirts, sandals, waterbottles
California croton	Croton californicus	smakhna'atl	stems, leaves	
California fuchsia	Epilobium canum	s'akht'utun 'iyukhnuts		
California goldenrod	Solidago californica	chtu 'ima	leaves	
California juniper	Juniperus californica	t'pi'ni		food
California polypody	Polypodium californicum	peye		
California Poppy	Eschscholzia californica	qupe		
California wild grape	Vitis californica	nunit	vine	rope
California wild rose	Rosa californica	watiq'oniq'on	fruit; petals	food; dried and crushed for baby powder, tea used as eye wash
California wood-sorrel	Oxalis albicans	aqnipshkay		
Canchalagua	Centaurium venustum			
Cat's ear (I)	Hypochoeris glabra, H. radicata		leaves	
Catchfly	Silene spp.			
Cattail	Typha spp.	khap		
Chamise	Adenostoma fasciculatum	na'		
Chamomile	Anthemis spp.			
Chaparral clematis, creek clematis	Clematis lasiantha, C. ligusticfolia	makhsik		
Chaparral mallow	Malacothamnus fasciculatus	khman		
Chaparral yucca, spanish bayonet	Yucca whipplei	shtakuk	leaves, rosette	fiber for sewing and cordage; roasted and eaten
Chaparral zygadene	Zigadenus fremontii	moyoq	leaves	
Charlock (I)	Raphanus spp.		seeds, leaves	
Checkerbloom	Sidalcea spp.			

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Cheeseweed	Malva parviflora	malwash		
Chia	Salvia columbariae	itepesh	seeds, shoots, leaves	food; tea for flu, chewed leaves so deer cant smell
Chuchupate	Lomatium californicum	chpa'	roots	
Chufa, yellow nut-grass	Cyperus esculentus			
Clarkia	Clarkia spp.			
Climbing penstemon	Keckiella cordifolia	tenech		
Clover	Trifolium spp.	shapuk	leaves, seeds	food
Coast live oak	Quercus agrifolia	kuw	bark, twigs, branches	dye; to singe hair; stirrer, bows, cradleboards
Coast redwood	Sequoia sempervirens	wima		
Coastal morning glory	Calystegia macrostegia	almakhmal 'I suninakhshep		
Coastal sagebrush	Artemisia californica	wewe'y		
Coastal wood fern	Dryopteris arguta	peye		
Cocklebur	Xanthium strumarium	shomoy	leaves	
Coffee fern	Pellaea andromedifolia			
Coffeeberry	Rhamnus californica	chatishwi 'ikhus		
Collinsia	Collinsia spp.			
Common Cryptantha	Cryptantha intermedia	tekhe'we	seeds	
Common fiddleneck	Amsinckia menziesii		seeds	
Common reed, carrizo grass	Phragmites australis	topo	stems	arrows, tubes to carry tobacco worn in ears, pipes
Common three square	Scirpus pungens	tup'	stems	thatching for house, sleeping mats, sacred enclosures, cradleboard padding, skirts, sandals, waterbottles
Common yarrow	Achillea millefolium	yepunash	roots, leaves	
Coyote Brush, charparral broom	Baccharis pilularis	molish		
Coyote Tobacco	Nicotiana attenuata	show	leaves	smoking
Creamcups	Platystemon californicus			
Curly dock (I)	Rumex crispus	alakhnipk	leaves, seeds, stems, roots	
Currant	Ribes spp.	sqa'y'nu, sqayi'nu		Food

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Dandelion	Malacothrix spp.	tsaxsmi		food
Death camas	Zigadenus venenosus	moyoq	leaves	
Deer grass	Muhlenbergia rigens		stalks	
Desert tea	Ephedra californica	kiwikiw		
Desert wild grape	Vitis girdiana	nunit		
Douglas nightshade	Solanum douglasii	qolpo'op, kclpccp	leaves	
Durango root	Datisca glomerata	aluqchahay 'isakhpilil		
Figwort	Scrophularia spp.		leaves	
Fleabane	Erigeron spp.			
Foothill ash	Fraxinus dipetala			
Four o'clock	Mirabilis spp.			
Foxglove (I)	Digitalis purpurea			
Fremont cottonwood	Populus fremontii	khwelekhwel, xwelexwel		
Fringe pod	Thysanocarpus			
Fringed indian pink	Silene laciniata	s'akhtutu 'iyukhnuts'		
Fringed linanthus	Linanthus dianthiflorus			
Fuchsia-flowered gooseberry	Ribes speciosum	stimiy 'iwi, tsiqun		
Giant bladder kelp	Macrocystis pyrifera			
Giant creek nettle	Urtica dioica	khwapsh	stems	
Giant reed (I)	Arundo donax	shukepesh 'ishaq		
Giant rye	Leymus condensatus	shakh	stems	arrows, tubes to carry tobacco worn in ears, cigarettes
Gilia	Allophyllum spp.			
Goldback fern	Pentagramma triangularis	peye		
Golden fleece	Ericameria arborescens			
Goldenstar	Bloomeria spp.		bulbs	
Goldfields	Lasthenia spp.			
Gooseberry	Ribes spp.	chtimiy		
Grass	Elymus spp.		stems	
Grass	Festuca spp.			
Grass	Stipa spp.			

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Grass (I)	Polypogon spp.			
Green everlasting	Gnaphalium californicum		leaves	
Greenbark ceanothus	Ceanothus spinosus	washiko	branches, flowers	digging sticks, fence posts, poles; lather for hair washing
Gum plant	Grindelia camporum	stiq shi'sha'w	whole plant	
Hairy ceanothus	Ceanothus oliganthus	washiko	branches, flowers	digging sticks, fence posts, poles; lather for hair washing
Holly-leaved cherry, islay	Prunus ilicifolia	akhtatapish	fruit, pits	food; food, boiled and mashed
Horehound	Marrubium vulgare		leaves	
Horsetail, scouring rush	Equisetum spp.	kiwikiw		
Horseweed	Conyza canadensis	wililik	leaves	
Hummingbird sage	Salvia spathacea	pakh	seeds, shoots, leaves	food; tea for flu, chewed leaves so deer cant smell
Indian hemp, dogbane	Apocynum cannabinum	tok	stems	important fiber for strings, nets, cordage
Indian paintbrush	Castilleja spp.	mashqupshlet akhukha'w	seeds	
Indian Tobacco	Nicotiana quadrivalvis	show	leaves	smoking
Jimson weed	Datura wrightii	momoy	roots, seeds, leaves	Healing and ritual use
Larkspur	Delphinium spp.			
Laurel sumac	Malosma laurina	walqaqsh		
Lemonadeberry	Rhus integrifolia	shtoyho'os		
Lily	Fritillaria spp.			
Lupine	Lupinus spp.	qlahaw'	fruit, seeds	food
Maidenhair fern	Adiantum jordanii			
Mallow	Malva spp.		seeds, leaves	food
Manzanita	Arctostaphylos glandulosa			
Mariposa Lily	Calochortus catalinae	utapits, 'utapikets	bulbs	
Melicgrass	Melica spp.			
Milkvetch	Astragalus spp.			
Miner's lettuce	Claytonia perfoliata	shilik	leaves, seeds	Food
Mint	Mentha spp.	alaqtaha		Food
Mock parsely	Apiastrum spp.			
Monardella	Monardella spp.			
Monkey flower	Mimulus spp.			
Mountain tea	Ephedra viridis	kiwikiw		
Mountain-	Cercocarphys	pich		

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
mohogany	betuloides			
Mugwort	Artemisia douglasiana			
Mule fat, water wally	Baccharis salicifolia	wita'y		
Mustard	Brassica spp.		leaves	
Narrow-leaved milkweed	Asclepias fascicularis	usha'ak	stems, sap	fiber for cordage, nets; dried and chewed
Navarretia	Navarretia spp.			
Nettles	Urttica holosericea			
Nuttall's scrub oak	Quercus dumosa var. dumosa	mis	bark, twigs, branches	dye; to singe hair; stirrer, bows, cradleboards
Oak mistletoe	Phoradendron villosum	stumuku'n		
Oaks	Quercus spp.		bark, twigs, branches	dye; to singe hair; stirrer, bows, cradleboards
Olney's three-square bulrush	Scirpus americanus	tup'	stems	thatching for house, sleeping mats, sacred enclosures, cradleboard padding, skirts, sandals, waterbottles
One-leaf pinyon	Pinus monophylla	posh		
Owl's clover	Castilleja spp.	stelek 'ipistuk		
Owl's clover	Orthocarpus spp.			
Panoche (type of sugar deposited by aphids on reed grass)				
Peony	Paeonia californica	mim		
Peppergrass	Lepidium nitidum	iqma'y	seeds	food
Phacelia	Phacelia spp.		leaves	
Pincushion	Chaenactis spp.			
Pine	Pinus spp.	tsikinin	nuts, pitch, wood	food; glue; canoes, bows
Pineapple weed (I)	Chamomilla suaveolens			
Pinon nuts		pef		food
Pitseed goosefoot	Chenopodium berlandieri	welel	seeds, roots, leaves	food
Plantain	Plantago spp.		leaves	
Plummer's baccharis	Baccharis plummerae	wililik		
Poison oak	Toxicodendron diversilobum	yasis		

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Popcorn flower	Plagiobothrys nothofulvus	k'a'nay		
Prickly-pear	Opuntia spp.	khi'il	stems, fruit	food
Primrose	Camissonia spp.			
Primrose	Oenothera spp.			
Prostrate spurge	Chamaesyce spp.			
Ragweed	Ambrosia spp.		leaves	
Ragwort	Senecio spp.		seeds	
Rattlesnake weed	Daucus pusillus	ch'atishwi 'ikhshap	roots	
Red maids	Calandrinia spp.	Khutash	seeds	
Red shanks, ribbonwood	Adenostoma sparsifolium			
Red willow	Salix laevigata	wak	wood, shoots, bark	poles for house frame, cradleboard; baskets, seed beaters; lashing, skirts, chewed as toothache remedy, tea for fever
Redstem filaree (I)	Erodium cicutarium	kwi'in	seeds, leaves	
Reed grass	Calamagrostis spp.			
Rosemary (I)	Rosmarinus officinalis	akhiye'p		
Rushes	Juncus spp.	mexmi, esmu, taf	stems	basketry material
Sacapellote	Acourtia microcephala		leaves	
Salt grass	Distichlis spicata	saha		
Saltbrush	Atriplex spp.	mo'		
Santa Barbara Honeysuckle, chaparral honeysuckle	Lonicera subspicata	chtu 'iqonon		
Santa Clara Island Ironwood	Lyonothamnus floribundus	wi'li		
Scarlet pimpernel	Anagallis arvensis	chikwi	leaves	
Scrub oak	Quercus berberidifolia	mis	bark, twigs, branches	dye; to singe hair; stirrer, bows, cradleboards
Sea fig (I)	Carpobrotus chilensis	shtamhil, shtoyho'os		
Seaweed				
Sedge	Carex spp.			
Shooting star	Dodecatheon clevelandii	stiq' 'iwaq'aq		
Snakeroot	Sanicula spp.			
Sneezeweed	Helenium puberulum	manakhshmu		
Snowberry	Symphoricarpos	chtu 'iqonon		

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
	mollis			
Soap plant	Chenopodium californicum	choch	seeds, roots, leaves	soap, husks used as brushes, fish poison
Soap plant, soaproot	Chlorogalum pomeridianum	pash	leaves, roots,	soap, husks used as brushes, fish poison
Sow thistle (I)	Sonchus spp.		leaves	
Spineflower	Chorizanthe spp.		whole plant	
Spurge	Eurphorbia spp.			
Starwort	Stellaria spp.		leaves	
Sticky cinquefoil	Potentilla glandulosa	chiqwi 'ikhakha'kh		
Sugar bush	Rhus ovata	shtoyho'os		
Sunflower	Agoseris spp.		seeds, leaves	food
Sunflower	Helianthus spp.			
Surfgrass, seagrass	Phyllospadix torreyi	chkapsh		
Tarweed	Hemizonia fasciculata	swey		
Tarweed	Hemizonia ramosissima		seeds	
Tarweeds	Madia spp.			
Telegraph weed	Heterotheca grandiflora		seeds	
Thistle	Cirsium spp.	ts'aqsmi	stalks, leaves	
Thistle sage	Salvia carduacea	pakh	seeds, leaves	food; tea for flu, chewed leaves so deer cant smell
Thistle with yellow flower		kajap		
Three-leaved sumac	Rhus trilobata	shuna'y		
Tidytip	Layia spp.		seeds	
Tobacco	Nicotiana clevelandii	show	leaves	smoking
Toyon, christmas berry	Heteromeles arbutifolia	qwe	berries, wood	food; arrows, tools, wedges, awls, hide scraper, cooking instruments
Tule, bulrush	Scirpus spp.		stems	thatching for house, sleeping mats, sacred enclosures, cradleboard padding, skirts, sandals, waterbottles
Tule, bulrush	Schoenoplectus spp.		stems	thatching for house, sleeping mats, sacred enclosures, cradleboard padding, skirts, sandals, waterbottles
Turkey-mullein	Croton setiger			
Valley oak	Quercus lobata	ta	bark, twigs, branches	dye; to singe hair; stirrer, bows, cradleboards

Cultural Resources Table A1
Plants Used by Chumash (Anderson 2005; Lightfoot and Parish 2009; Timbrook 2007)

Common Name	Scientific Name	Ventureño Chumash Name	Notes	Uses
Wallflower	Erysimum spp.			
Watercress	Rorippa nasturtium-aquaticum	spe'ey he'so'o		
Wedge-leaved horkelia	Horkelia cuneata	chiqwi 'ikhakha'kh		
Western nettle	Hesperocnide tenella			
Western sycamore	Platanus racemosa	khsho', xso		
Western vervain	Verbena lasiostachys	also'o, shikhwapsh 'l'ashk'a		
Wheatgrass (I)	Agropyron spp.			
White alder	Alnus rhombifolia	mow		
White everlasting	Gnaphalium canescens		leaves	
White sage	Salvia apiana	khapshikh	seeds, leaves	food; tea for flu, chewed leaves so deer cant smell
Whitestem filaree	Erodium moschatum	kwi'in	seeds, leaves	
Wild buckwheat	Eriogonum elongatum, E. nudum	an	stems	
Wild celery (I)	Apium spp.		stalks	
Wild cucumber, man root	Marah macrocarpus	anmakhwaka'y	seeds, leaves	Food
Wild gourd	Cucurbita foetidissima	mo'okh	fruit	Food
Wild oat(I)	Avena spp., Bromus spp.	aluche'esh	seeds	Food
Wild onion	Allium spp.	tspasisi	bulbs	food
Wild rhubarb, canaigre	Rumex bymenosepalus	alakhpiy	leaves, seeds, stems, roots	food
Willow	Salix spp.	ctayit	wood, shoots, bark	poles for house frame, cradleboard; baskets, seed beaters; lashing, skirts, chewed as toothache remedy, tea for fever
Wooly blue curls	Trichostema lanatum	akhiye'p		
Yerba buena	Satureja douglasii	alaqtaha		
Yerba mansa, swamp root	Anemopsis californica	onchoshi		
Yerba santa	Eriodictyon crassifolium	wishap		
	Matricaria spp.		leaves	

Cultural Resources Table A2
Animals used by Chumash (Anderson 2005; Librado 1980; Lightfoot and Parish 2009)

Common Name	Scientific Name	Chumash Name
Abalone	Haliotis spp.	
Albacore	Thunnus alalunga	
Anchovies	Engraulis mordax	
Angel shark	Squatina californica	
Auger snail	Terebra danai	
Badger	Taxideaspp.	aluses
Bald eagle	Haliaeetus leucocephalus	maxiwo
Banded guitarfish	Zapteryx exasp erata	
Barn owl	Tyto alba	sew
Barnacle	Balanus nubils	
Barnacle	Balanus tintinnabulum	
Barred surfperch	Amphistichus argenteus	
Bat		makal
Bat ray	Myliobatis californicus	
Bean clam	Donax gouldii	
Bear		xus
Bent nose clam	Macoma nasuta	
Big skate	Raja binoculata	
Black turban snail	Chloorostoma funebralis	
Black turban snail	Tegula funebralis	
Blacksmith	Chromis punctipinnis	
Blue shark	Prionace glauca	
Blue shark	Prionace glauca	
Bluefin tuna	Thunnus thunnus	
Bobcat	Lynx rufus	alxay
Bonito	Sarda chiliensis	
Broadbill swordfish	Xiphia gladius	
Brush rabbit	Sylvilagus bachmani	
Burrowing owl	Athene cunicularia	kokok
Butterfly		aijatulutul
Butterfly ray	Gymnura marmorata	
California barracuda	Sphyraena argentea	
California butterclam	Saxidomus nuttalli	
California cone	Conus californicus	
California halibut	Paralichthys californicus	
California horn shark	Heterodontus francisci	
California hornsnail	Cerethidia californica	
California skate	Raja inornata	
California swell shark	Cephaloscyllium ventriosum	
California thornback	Platyrhinoidis triseriata	
California woodpecker		culakak
Carinate dove shell	Mitrella carinata	
Carpenter's turrid	Megasurcula carpenteriana	
Chestnut cowry	Cypraea spadicea	
Chinese hat snail	Crepidula lingulata	
Clam	Protothaca staminea	
Clipped semele	Semele decisa	
Cockles	Chione spp.	
Cottontail rabbit	Sylvilagus auduboni	
Coyote	Canis latrans	
Crabs		

Cultural Resources Table A2
Animals used by Chumash (Anderson 2005; Librado 1980; Lightfoot and Parish 2009)

Common Name	Scientific Name	Chumash Name
Crow		?a
Diamond stingray	Dasyatis dipterurus	
Dog		ctiin
Dogfish	Squalus acanthias	
Duck		
Duck clam	Mactra californica	
Eel		
Eight-plated marine mollusk	Mopalia mucosa	
Eschricht's bittium	Bittium purpureum	
File clam	Lima dehiscens	
Flattip piddock	Penitella penita	
Flying Squirell		
Frog		xwetet
Giant kelpfish	Heterostichus rostratus	
Giant sea bass	Stereolepis gigas	
Golden eagle	Aquila chrysaetos	slow, clow
Grasshopper		tuq
Gray fox	Urocyon cinereoargenteus	how
Gray smoothhound	Mustelus californicus	
Great horned owl	Bubo virginianus	muhu
Great white shark	Carcharodon carcharias	
Green falsejingle	Pododesmus cepio	
Harbor seal	Phoca vitulina	
Hawk		
Hooked slippersnail	Crepidula adunca	
Horn shark	Heterodontus francisci	
Hummingbird		
Jack	Caranxhippos caninus	
Jack mackeral	Trachurus symmetricus	
Jackrabbit	Lepus californicus	
Jacksmelt	Atherinopsis californiensis	
Jewlbox	Chama spp.	
Kellet's whelk	Kelletia kelletii	
Kelp bass	Paralabrax clathratus	
Kingbird		
Leopard shark	Triakis semifasciata	
Limpets	Lottia asmi	
Mako shark	Isurus oxyrinchus	
Monterey Spanish mackeral	Scontheromorus concolor	
Moon snail	Polinices reclusianus	
Mountain lion	Puma concolor	tukem
Mule deer	Odocoileus hemionus	wi
Murex snail	Acanthina spirata	
Murex snail	Forreria belcheri	
Mussel	Mytilus californianus	
Mussel	Septifer bifurcatus	
Nassa mudsnail	Nassarius mendicus	
Nuttall's cockle	Clinocardium nuttalli	
Ocean skipjack	Katsuwonus pelamis	
Onyx slippersnail	Crepidula onyx	
Owl		

Cultural Resources Table A2
Animals used by Chumash (Anderson 2005; Librado 1980; Lightfoot and Parish 2009)

Common Name	Scientific Name	Chumash Name
Oyster	Ostrea lurida	
Pacific electric ray	Torpedo californica	
Pacific gaper clam	Tresus nuttali	
Pacific hake	Merluccius productus	
Pacific jewlbox	Pseudochama exogyra	
Pacific Lamprey	Lampetra tridentata	
Pacific mackerel	Scomber diego	
Pacific staghorn sculpin	Leptocottus armatus	
Peregrine Falcon	Falco peregrinus	xelek
Periwinkle snail	Littorina planaxis	
Periwinkle snail	Littorina scutulata	
Pismo clam	Tivela stultorum	
Plainfin midshipman	Porichthys notatus	
Pocket gopher	Thomomys monticola	oxwo
Prickly shark	Echinorhinus cokkei	
Proghorn	Antilocapra americana	qaq
Purple olive shell	Olivella biplicata	
Purple sea urchin	Strongylocentrotus purpuratus	
Queenfish	Seriphus politus	
Rainbow Trout/Steelhead	Onchorhynchus mykiss	
Rattlesnakes	Crotalus spp.	
Raven		
Red ants	Pogonomyrmex californicus	shutilhil
Redtail hawk	Buteo jamaicensi	kwic
Rock cod	Lotella rhacina	
Rock snail	Shaskyus festivus	
Rockfish	Sebastodes spp.	
Rough keyhole limpet	Diodora aspera	
Round stingray	Urolophus halleri	
Salmon shark	Lamna ditropis	
Sandfleas		
Sardines		
Scallop	Acquipecten	
Scallop	Hinnites multirugosus	
Sea lion	Zalophus californianus	
Sea otter	Enhydra lutris	
Sea snail	Ocenebra poulsoni	
Sea snail	Pseudomelatoma spp.	
Sea turtle		
Seals	Pinipeds	
Sevengill shark	Notorynchus maculatus	
Sheephead	Pimelometopon pulchrum	
Shovelnose guitarfish	Rhinobatos productus	
Sidewinder	Crotalus cerastes	
Sixgill shark	Hexanchus griseum	
Six-sided tusk snail	Dentalium neohexagonum	
Skipjack	Katsuwonus pelamis	
Skunk	Mephitis mephitis	taxama
Soupfin shark	Galeorhinus zyopterus	
Specklefin midshipman	Porichthys myriaster	
Spiny Pricklycockle	Trachycardium quadragenarium	

Cultural Resources Table A2
Animals used by Chumash (Anderson 2005; Librado 1980; Lightfoot and Parish 2009)

Common Name	Scientific Name	Chumash Name
Spotted unicorn	Acanthina punctulata	
Squirrel	Otospermophilus beecheyi	pistuk
Striped marlin	Kajikia audax	
Tiger shark	Galeocerdo cuvier	
Toad		
Tulip snail	Fusinus kobelti	
Turban snail	Astrae undosa	
Valley quail	Callipepla californica	iqiy
Volcano limpet	Fissurella volcano	
Walleye surfperch	Hyperprosopon argenteum	
Wavy top turbans		
Western Fat Dog Whelk	Nassarius perpinguis	
White croaker	Genyonemus lineatus	
White goose		wawau
White seaperch	Phanerodon furcatus	
White-footed mouse	Peromyscus	qonon
Worm shells	Dendropoma rastrum	
Yellowfin croaker	Umbrina roncado	
Yellowtail	Seriola dorsalis	
	Acmaea gigantea	
	Dentalium semipolitum	

Sources of Ethnographic Data

The earliest ethnographic sources of information can be found in the records of the Spanish explorers and later missionary records. Various documents related to Spanish exploration and subsequent colonization are available, and include accounts by Cabrillo (Wagner 1929), Vizcaino (Wagner 1929), Fages (1937), Constansó (1911), Crespi (1927), Font (1930), Palóu (1926), Longinos Martinez (1961), and Menzies (1924). Modern ethnographies with useful information include Blackburn (1975), Gamble (2008), Grant (1978a, 1978b), Horne (1981), Hudson et al. (1977), Hudson and Underhay (1978), Librado (1980), and McLendon and Johnson (1999).

Contemporary California Native Americans with Ethnographic Affiliations

Coastal Band of the Chumash Nation

The Coastal Band of Chumash are based out of Santa Barbara and are not yet federally recognized. The tribe holds cultural education workshops, including language and cultural education classes.

Santa Ynez Band of Mission Indians

The Santa Ynez Band are the only federally recognized Chumash tribe, and have a reservation in Santa Barbara County. They maintain a tribal business council with four elected memebers and a tribal chairperson, and tribal members vote on proposals made by the business council.

A Tribal Elders Council consults on many of the projects that are of concern to the Tribe. Elections are held every two years. The tribe also has a casino and hotel, and holds an annual pow-wow.

Barbareno/Ventureno Band of Mission Indians

The Barbareno/Ventureno consists of Chumash families from Santa Barbara and Ventura Counties. The tribe is not yet federally recognized. The tribal council consists of a five-member group based out of Ojai. This group owns the ~6 acres of land that remains of the village of *Sa'aqtik'oy.*

There are also several individuals of Chumash descent on the list provided by the NAHC. These individuals live near the proposed project area and are often concerned with impacts to cultural resources and ensuring any human remains found are treated with dignity and in accordance with applicable LORS.

HISTORIC SETTING

Spanish Period (1769 to 1822)

Father Junipero Serra, along with Gaspar de Portola, the Governor of Baja California, led the initial Spanish expedition into Alta California in 1769-70. Following these expeditions, the Spanish began to establish the mission system, marking the beginning of the Spanish Period (1769 to 1822). The Mission system involved the forced acculturation of native peoples as far north as the present-day City of San Francisco. In 1795, faced with political pressures at home and a growing population in Alta California, the Spanish government began permitting a number of family ranchos to be established. The *Ventura County Historic Preservation Plan*, notes that this period is characterized by three defining events: the Portal Expedition (1769); the establishment of the Mission San Buenaventura (1782) and the first Spanish Rancho established north of the mission (Ventura 1996: 8).

Mission San Buenaventura

Junipero Serra founded Mission San Buenaventura in 1782, north of an existing Chumash village near the Pacific Ocean and adjacent to the Ventura River. The establishment of the missions by the Spanish created an overland transportation route along the coast of California known as El Camino Real, or The Kings Highway, although this route was likey discontiguous and changed over time. During the Mission/Spanish Period in the Western Santa Clara Valley, the missionary administration at Mission San Buenaventura controlled the area. Missionaries used the valley and foothills for seasonal livestock grazing (Gidney 1917: 313).

Mexican Period (1822 to 1848)

Following the dominance of the mission system in Califonria, the Mexican period began in 1822 when Mexico gained its independence from Spain. Lacking support from the European colonial government, Missions in California began to secularize. During the Mexican period, land use in the Santa Clara River Valley continued to be characterized by cattle ranching and dry farming.

The *Ventura County Historic Preservation Plan,* points to the following events as defining moments in the Mexican Period: Mexican independence from Spain and the First Mexican land grants in Alta California (1822); Mission secularization (1834); gold discovered in San Feliciano Canyon (1841); and the Mexican-American War (1846) (Ventura 1996: 9).

Land Grants and Ranchos

In Ventura County, a total of 19 land grants were issued to private citizens, two by the previous Spanish government and 17 by the Mexican government (Ventura 1996: 9). The western Santa Clara Valley was split into two tracts: Rancho Santa Paula y Saticoy and Rancho Ex-Mission. Rancho Santa Paula y Saticoy occupied the majority of the valley floor running east and west, south of the modern location of Foothill Road to the Santa Clara River. Rancho Ex-Mission extended east from the modern city of Ventura through the foothills of the Sulphur Mountains, including portions of the northern valleys. Santa Paula Creek marked the eastern extent of Rancho Ex-Mission. The Mexican government granted Rancho Santa Paula y Saticoy (17,773 acres) to Manuel Jimeno Casarin in 1843. Rancho Ex-Mission continued to be operated by Mission San Buenaventura and was primarily used for cattle grazing after Mexican Independence.

American Period (1848 to present)

The Mexican-American War of 1846-1848 ended Mexico's control of Alta California, and California became an official state of the United States of America in 1850. Immediately following the Mexican American war, Thomas Wallace (T.W.) More began purchasing large tracts of land throughout Ventura and Santa Barbara counties. The lands purchased by More had formally been Spanish and Mexican land grants. T.W. More and his brother Henery H. More became the largest landowners in the county, including owning the majority of Rancho y Saticoy and Rancho Ex-Mission properties (Gidney 1917: 487). T.W. More commissioned W.D. Hobson to build the Monterey-style adobe residence (in the area now known as Orchard Farm) in 1860. This building served as the headquarters of More's ranching operation, and was the only permenant residence in the valley. Persistent droughts in the 1850s and early 1860s forced T.W. More to liquidate his holdings in the valley. More sold 15,000 acres of Rancho Santa Paula y Saticoy to George G. Briggs in 1864 (Gidney 1917: 487).

Briggs had experience in horticulture, and had established orchards in Marysville, California before coming to Ventura County. Knowing this experience explains Briggs' planting of the first commercial orchard (peaches and walnuts) in the Santa Clara River Valley near the More Adobe in 1862 (Triem and Stone1996: 3). In 1867, Briggs hired land agent E.B. Higgins to begin subdividing his 15,000 acres into 150-acre parcels. Higgins' surveyor, W.H. Norway, completed the land survey in 1867. Briggs then sold the parcels to farmers immigrating to the Santa Clara River Valley from the northern California gold fields and the eastern United States (Sheridan 1955: 2-7).

Full-scale development of agriculture and petroleum in the valley and surrounding mountains was restrained by the area's limited transportation infrastructure.

Two exceptions to this were More's small orchard and some limited petroleum exploration in the northern foohills. **Cultural Resources Figure 23** shows some of the earliest petroleum exploration on Sulphur Mountain, prior to the development of transportation networks through the valley. This constraint began to disapear in 1887 when Southern Pacific Railroad began operating rail service through the valley on the Santa Paula Branch Line. **Cultural Resources Figure 24** documents the arrival of the Santa Paula Branch Line to the Saticoy Station in 1887, to the relief of valley residents. The arrival of the railroad allowed both agriculture and petroleum to be sold to markets throughout Southern California, and via deep-water ports in Oxnard to the northern California cities of San Fransisco and Sacramento. During this period, citrus growers in the valley began to form cooperatives to provide more consistent and integrated irrigation, transportation, packing, and marketing of their products. Prior to the development of centralized packing houses, pickers boxed fruit in the field and loaded it directly into boxcars designed for transporting agriculture, as shown in **Cultural Resources Figure 25**. At the same time, several petroleum companies consolidated to form the Union Oil Company in 1890.

Rapid growth of the agricultural and petroleum industries led to the establishment of Santa Paula as a city in 1902. At the same time, Union Oil Company made the strategic decision to move its headquarters from Santa Paula to Los Angeles. Nevertheless, the first two decades of the twentieth century were marked by unprecedented growth of the citrus industry and the establishment of the South Mountain Oil Fields. During the 1920s, the valley experienced a rapid expansion in construction of homes and the subdivision of farm land primarily around Santa Paula and Saticoy, and east of Ventura. Many of the large estates built during the 1880s and 1890s were designed to mimic styles from early European history. One prominent example of this style was the Sharp-Thille Residence, constructed in the Italianiate style as shown in **Cultural Resources Figure 26**; however, many homes built during the 1920s were constructed in the Craftsman architectural style, a popular California style found throughout the citrus growing regions of Southern California.

During the 1930s all industries in the valley suffered as a result of the Great Depression, and agriculture and petroleum were no exception. When the United States entered WWII in 1941, the War Department identified both agriculture and petroleum as critical to the war effort, and the valley experienced a resurgence of these two vital industries. Throughout the latter half of the 20th century the cities of Ventura and Santa Paula grew quickly, eventually encroaching on the valley from the west and east with residential and commercial developments. Freight was increasingly sent by automobile after WWII, leading to the construction of State Highway 126 in 1968. After several reductions in service, the Southern Pacific Railroad eliminated daily rail service on the Santa Paula Branch Line in 1978. Today agriculture continues to play a vital role in the region's economy. However, in recent years highway and automobile improvements have allowed Ventura County to welcome a large commuting population.

Thematic Historic Context

Agriculture

Until the end of the 19th century, unrelaiable sources of irrigation and transportation limited the valley to low-intensity cattle ranching, grain production, and, to a limited extent, the more drought-tolerant forms of fruit cultivation. Briggs initiated fruit-growing efforts in the western end of the valley in 1862, but his attempts to grow peaches and pears commercially were met with little success despite the region's favorable Mediterranean climage, leading Briggs to subdivide and sell his land (Emerson 1968: 11).

Citrus

Citrus was likely first introduced to California in 1769 by Franciscan missionaries at the mission in San Diego. California missions typically contained gardens and orchards to support the population of missionaries and native laborers. In 1831, William Wolfskill planted the first commercial grove in California near the Mission San Gabriel. The discovery of gold in Northern California in 1849, and the ensuing gold rush, opened vast markets for the emerging citrus industry during the 1850s. During the Gold Rush, growers began to ship citrus north to San Francisco and Sacramento. By 1870, many small orchards had been planted in the citrus-growing regions, which by that time already stretched from Ventura County to San Diego (Ferguson 2014: 3-5).

During the 1880s a large number of American migrants established farms in Southern California. Nathan W. Blanchard established the first known commercial citrus grove in the western Santa Clara River Valley in 1874. The shift to citrus accelerated rapidly in the 1890s, culminating with the establishment of the agribusiness giant Limoneira Company in 1893. The *Los Angeles Times* estimated that by 1885 over ninety percent of California's citrus growers owned less than ten acres and at the most produced just 5,000 boxes of fruit annually (Hartig 2001: 69). Small-scale citrus operations dominated the western Santa Clara Valley in this period, and can be see today in the spaces occupied by original farm clusters, and the spatial relationship between the main houses, neighbors, and outbuildings that date to this period.

These early citrus growers relied on buying agents to manage the picking, packing, shipping, and marketing of the fruit. During the early-1880s, California's citrus crop was largely sold to markets within California, and growers marketed to Southern California communities. The relatively small population of California limited the amount of fruit that could be profitably sold to local markets, and by the middle of the decade the citrus industry had grown so large it overwhelmed the local demand, and the oversupply of citrus began driving down the cost of fruit (Sunkist Fruit 1993: 6).

Throughout Southern California during the 1890s the citrus industry expanded rapidly. The railroad provided a means to transport fruit to eastern markets, but there was no coordinated effort to know how much fruit was being shipped. Buyers began to purchase fruit only on consignment, passing nearly all risk to the grower (Sunkist Fruit 1993:10-12). Consignment sales often sold for less than the cost of growing, packing, and shipping the fruit, which resulted in negative returns for the grower.

A network of regional cooperatives became established in the early 1880s and 1890s, and in 1893 a large number of Southern California fruit growers met in Los Angeles founding the California Fruit Growers Exchange (Exchange). The Exchange vertically integrated the citrus industry throughout Southern California, and parts of Arizona, by controlling picking, packing, shipping, and marketing for its members. These cooperatives led to the establishment of centralized packing houses as shown in **Cultural Resources Figure 27, 28** and **29**.

The influence of the Exchange on the development of the citrus industry in the Santa Clara River Valley is unmistakable. Among the founders of the Exchange was Charles C. Teague, an important manager of the Limoneira Company. Teague would become both general manager of the Limoneira and head of the Exchange (Belknap 1968: 122-123). Limoneira's packing houses, employee housing, windrows, irrigation systems, and orchard heating systems were all examples of technology influenced by Teague's attempts to make the Santa Clara River Valley, and Southern California more broadly, the citrus capital of the world (Teague 1944: 49-61).

At its height from 1920-1940, California's citrus region occupied large swaths of land from Ventura County through Los Angeles and Orange counties, to San Diego. The industry experienced sustained expansion in both total land area and fruit production duing this period. Some estimates put the increase in production at nearly 150 percent. The growth brought a profound transformation of the entire economic, social, and physical character of Southern California. The establishment of this mature citrus landscape and culture helped solidify an image of California in the national consciousness (see **Cultural Resources Figure 30** and **Cultural Resources Figure 31**). This depiction became thoroughly integrated into the regional character, championed for decades by marketing cooperatives like the Exchange, and came to define Southern California in the minds of Americans and around the world (Triem 2007: Section 4.12, p13).

In the years immediately following WWII, Southern California experienced a population boom as soldiers returned home from war and migrated to Southern California. Citrus ranchers, both large and small, realized their land was suddenly worth more than the orchards that occupied them. During the same period, a root disease known as the "Quick Decline" struck the majority of groves in Southern California. In previous generations, citrus growers had no choice but to fight citrus diseases like Quick Decline through technology and perseverance, but with the ability to earn a small fortune from selling their holdings, developers transformed the citrus farmlands into a vast network of highways, surface streets, and subdivisions. Much of the remaining growers moved north into the San Joaquin Valley and southwest into Arizona (Hartig 2001: 392-393). In 1996, historian Judy Triem and Mitch Stone called the Western Santa Clara Valley "one of the best preserved examples of a mature Southern California citriculture landscape" (Triem and Stone 1996: District Record).

The Limoneira Company

In 1891 Wallace L. Hardison and Nathan Blanchard established the Limoneira Company on 412 acres of land west of Santa Paula between Cummings Road in the east, Todd Barranca in the west, Foothill Road in the north, and Santa Paula Street to the south. The original bylaws stated that the company's purpose was "culture, curing, and marketing of the lemon" (McBane 2001:15). In acreage alone, Limoneira quickly dwarfed all other citrus ranches in the western end of the Santa Clara River Valley. Beyond simply being larger, the founders of Limoneira also brought business practices and capital developed during their business experiences with Union Oil Company, Santa Paula's largest and most powerful petroleum company. The business practices included a long-term outlook, vertical integration, and technological innovation which allowed Limoneira to quickly dominate the fledging lemon industry in the United States. **Cultural Resources Figure 32** shows early mechanization on Limoneira, including Japanese and Mexican immigrant workers washing lemons in an early packing facility at company headquarters.

Limoneira's first plantings included lemons, grapefruit, and oranges obtained from Glendora, California. Within five years the entire tract had been planted in orchards (McBane 2001: 20). At the same time, the company planted windbreaks that extended the full length of the property. A row of trees was planted along Todd Barranca, while six linear wind breaks were established following the original survey tract layout and planted at 160-foot intervals. Many of these early tree rows have since been removed but their locations can be seen in the field pattern surrounding the Limoneira headquarters. **Cultural Resources Figures 33, 34,** and **35** shows the original Limoneira holdings, including mature tree rows. Limoneira chose blue gum eucalyptus trees for the tree rows due to their rapid growth. The treerows in the Santa Clara Valley represent a scientific approach to wind management, which was later propagated throughout the industry by publications like the *California Citrograph*, which stated in 1921:

> *[T]he Globus or Blue Gum has proved the most satisfactory [species]. It makes a thick bushy growth, effectively stopping the wind, and it is so flexible that it yields easily, deflecting the air currents upward and protecting areas ten times the height of the tree to the leeward* (Lunderno 1921:6).

Blanchard had purchased water rights for a grist mill on Santa Paula creek and, along with co-founder E.L. Bradley, established the Santa Paula Water Company in 1872. Along with the water rights for Santa Paula Creek, in 1893 the founders of Limoneira organized the Thermal Belt and Water Company with the sole purpose of providing water for Limoneira (Freeman 1968:27). Hardison engineered a reservoir, pipe, and flume system capable of irrigating all of Limoneira's original holding. The system contained over ten thousand feet of square redwood flumes, which fed stone drainage ditches. **Cultural Resources Figure 36, 37** and **38** shows the construction of water diversion systems in the valley. The system also was used in winter as drainage canals to move water from the foothills to the Santa Clara River (Emerson 1968:27). By 1897 surface water supplies had proven insufficient, and pumping plants were built along Farmers Ditch.

In later years Limoneira replaced the redwood flume system with a series of reinforced concrete pipes and ditches. This evolution of the irrigation systems in the Santa Clara Valley citrus ranches mirrors the evolution of irrigating California's citrus crops throughout the citrus region. The system of reinforced concrete pipes, weirs, penstocks supported by a system of wells and pump houses is also known as a flood and frough system. **Cultural Resources Figure 39** provides an artist depiction of the flood and frough system, presumably on Limoneira's Velencialands addition. Evidence from the *California Citrograph* indicates Limoneira's system was manufactured by the *Keller-Thompson* Irrigation Company, boasting that its products allowed citrus farmers to scientifically manage water – one of Southern California's most precious commodities (Culbertson 1916:5-6). Most of these systems in the citrus region have been removed overtime, but on Limoneira and other citrus ranches in the Western Santa Clara Valley, these systems continue to function.

The first and largest acquisition of property for the Limoneira Company occurred in 1907, when the company purchased the Olivelands Division from Clariesee Harrold Ramsey. The Olivelands tract consisted of 2,300 acres, to the west of the original Limoneira property. Olivelands was an irregular-shaped tract of land, planted in walnuts and olives, beans, corn, and hay. The addition of Olivelands also included portions of Aliso Canyon and Ellsworth Barranca and the associated water rights for the property. The company gained a fuctional pumping plant located at the corner of Cummings and Middle Roads of Olivelands (Emerson 1968: 50).

Limoneira's growth continued in 1922 when it purchased the Harwood Tract, or "Valencialands" addition from Thomas Harwood. Ellsworth Barranca forms the western boundary of the Harwood Tract which stretches south and east for roughly one-half mile. Valencialands was planted in a crop of Valencia Oranges. The same year Limoniera purchased 550 acres six miles west of Limoneira ranch headquarters. The acquisition became known as "Limoneira Del Mar" including Keller-Thompson irrigation system and pumping houses as shown in **Cultural Resources Figure 40**. Limoniera planted both Valencialands and Limoneira Del Mar with blue gum eucalyptus or poplar windrows at 526-foot intervals (Emerson 1968:74).
The expansion of the Limoneira Company beginning in the 1920s is emblematic of the booming Southern California citrus economy from 1920-1945. Limoneira was an active member of the California Fruit Growers Exchange, also known as Sunkist. Sunkist and other cooperatives allowed citrus growers to exchange information about managing and housing their diverse workforce, controlling diseases and pests, combating frost, and other fruit production methods (Teague 1944:82). During the oversight of Teague, Limoneira emerged as a leading innovator in both housing and managing its workforce, fruit production, and shipping methods. **Cultural Resources Figure 41** and **42** depicts citrus pickers and packers outside a Limoneira facility on the Olivelands division at the height of the citrus industry in Southern California. Through the Exchange, Teague developed a method of preparing fruit for market known as the "Teague Method" that revolutionized citrus packing by using natural air flows in packing houses (Teague 1944: 47-49).

Limoneira underwent its largest expansion of the company's history in 1985 when it joined with Edwards Ranch Associates (Triem and Stone 1996: district record). Limoneira renamed their new addition Orchard Farm and set to work utilizing the former Edwards Ranch. Along with the Edwards Ranch purchase, Limoneira became stewards of The More Adobe and Edwards Ranch farm cluster, one of the oldest and most significant buildings in the region. **Cultural Resources Figures 43** and **44** show the More Adobe in 1985, when Limoneria becamse stewards of Orchard Farm. **Cultural Resources Figure 45** shows the More Adobe as it looks today, in 2016. The More Adobe complex, or Edwards Ranch farm cluster on Orchard Farm, contains employee housing and barns (see **Cultural Resources Figure 46**) that represent the evolution of buildings in the Western Santa Clara River Valley. This highly significant ranch has the Valley's oldest building and only remaining adobe west of Santa Paula, as well as other buildings that show the architectural evolution of building types in the region. Limoneira's expansion south and west, culminating in the Orchard Farm acquisition, made them the largest and most prominent Lemon producer in the United States. **Cultural Resources Figure 47** provides an idealic artist interpretation of the Limoneira company headquarters around 1920.

Citrus Workers' Housing

In the late 19th and early 20th centuries Chinese, and then Japanese, immigrants provided the bulk of the agricultural labor force in Ventura County, including in the Santa Clara River Valley. After the passage of the Chinese Exclusion Act in 1882, the Gentleman's Agreement of 1907, and finally the Immigration Act of 1924, immigration from Asia no longer played a significant role in the county's agricultural workforce. Between 1910 and 1920, the Mexican revolutionary war and economic policies of President Porfirio Diaz caused a large number of Mexican nationals to immigrate to the United States. At the same time, the Southern California agricultural economy began to expand, followed by even greater demand from the war economy of WWI. These trends caused many Mexican immigrants to seek employment in Southern California and Ventura County.

The majority of citrus ranches located in the Santa Clara River Valley provided some form of workers' housing for ranch employees onsite, due largely to the relative remoteness of the crops to nearby towns. Most small ranches provided just a single family house for a worker and his family. Some medium sized ranches constructed several small cottages that housed multiple families. **Cultural Resources Figure 48** through **Cultural Resources Figure 52** documents workers' housing on Limoneira from early campsites, to dormitories, and eventually workers' camps provided by the company. These workers' housing buildings are extant on many historical farm clusters throughout the valley today. Only the largest citrus ranches, such as Limoneira, approached workers' housing as a corporate policy that sought to reduce cost caused by labor shortages and ensure a year-round workforce (Gonzalez 1994:37).

As early as 1897, Limoneira began building workers' housing for single white men at the ranch headquarters. In that year, north of the main packing house, the company built a two-story dormitory for white workers (McBane 2001:256). By 1904, faced with a growing number of Chinese and Japanese immigrant workers, the company constructed

a ninety-six man dormitory adjacent to the existing whites-only dormitory, as shown in **Cultural Resources Figure 53** and **54**. The dormitories were built on one side of the packing house, while the white supervisors and their families lived in cottages on the other. **Cultural Resources Figure 55** shows a row of white workers' housing constructed in the Califronia Craftsman architectural style.

The first appearance of Mexican workers at Limoneira occurred when the company acquired the Olivelands division in 1907. The large campsite of Mexican agricultural workers and their families lived along the Todd Barrancca in Wheeler Canyon. These workers harvested olives and walnuts on the Olivelands tract before Limoneira purchased the land. The campsite consisted of a collection of huts and tents built from miscellaneous materials including wood, tin, canvas and sacks. The unplanned campsite lacked electricity, running water, or sanitation (McBane 2001:261). In 1911, Limoneira initiated a systematic process of building Mexican family housing. Unlike previous workers' housing that had been located at the ranch headquarters, the Mexican houses were small segregated Mexican villages, known by their residents as "campos." In total, Limoneira built nine camps between 1911 and 1941, numbered sequentially from Camp 100 through Camp 900 (McBane 2001:262). Each campo consisted of fifteen to forty cottages, similar in site plan and design. The buildings were wood balloon-frame construction, a gable roof, and board-and-batten siding (Shamel 1918:151). Cold water was typically provided to the campo by a common spigot, and the company located outdoor privies behind each cottage (McBane 2001: 262).

Throughout Southern California, Mexican workers were actively recruited by American employers as early as 1890. Other industries often provided their workforce racially segregated housing, lacking many of the amenities provided by Limoneira during the same period (McBane 2001:265). In 1915, the California Commission of Immigration and Housing began partnering with county health agencies to initiate an inspection program of citrus "labor camps and Mexican Villages" (CCIH 1915). The agency inspections of the camps uncovered serious health problems that also concerned Limoneira (McBane 2001:265). Facing increasing pressure from state and county inspectors, as well as financial concerns about worker retention, in 1934 Limoneira undertook major upgrades to the campos, which included installing electricity, indoor hot-cold running water and a built-in bathroom facilities throughout the ranche's Mexican villages.

Limoneira's Mexican campos were unique when compared to Mexican housing provided by other citrus companies and other industries (Culbertson 1920:252). Inspired by general manager Charles Teague, Limoneira believed that employees housed by the company in segregated and comfortable accommodations would ensure a reliable year-round workforce at the ranch. **Cultural Resources Figure 56** and **57** depicts a model white working housing complex constructed by the company at the entrance to the company headquarters. In several industry publications, company representatives cited the need for Mexican laborers to maintain their own gardens to give their families a sense of self determination (Shamel 1918:151). In addition, Teague insisted that company housing would dissuade workers from organizing to demand higher pay or other benefits.

However, even the relatively comfortable company housing provided by the company would not prevent a major effort at unionization which led to unrest during WWII.

In 1941, workers at Limoneira joined thousands of other agricultural workers throughout Ventura County in a massive labor action that threatened to paralyze the agricultural industry in Ventura County. Teague, now in his early 70s, refused to accept a unionized workforce at Limoneira. The manager's urgency can be seen in his opening statement at a meeting of Ventura County growers when he said, "[W]e are fighting for the future not only of the citrus industry, but of all agriculture and the prosperity of all the communities of this county…and California" (SPT 1941a). In the end, the company retaliated against the workers by evicting hundreds of Limoneira farmworkers and their families from company housing (SPT 1941b). Many of the families who had lived in the campos for decades at that point, were forcibly removed and ended up camping in local Santa Paula city parks. This long and dramatic strike has been cited by historians as one of the major factors in the initiation of the federal Bracero Program in the coming decades, a program which dramatically changed the Mexican-American experience for thousands of immigrants throughout the United States (Zamudio-Gurrola 2009:31).

The Bracero Program (1942-1964) was a controversial bi-national agreement between the United States and Mexico, which allowed the large-scale importation of temporary Mexican agriculturel laborers. Bracero workers entered into a contract that gave them individual a specific work assignment for a finite period. After a contract expired workers agreed to return to Mexico. However, many Braceros, as they were commonly referred to, stayed in the country in violation of the terms of the contract. Braceros and their children would forever change the demographics of Mexican-American communities following the official end of the program in 1964. Limoneira workers cycled through the campos and the dormitories at the ranch headquarters during the first few years of the program. By 1962, Braceros made up the majority of workers harvesting citrus at Limoneira (Zamudio-Gurrola 2009:17). At first, many of the family housing in the campos were modified to house single Bracero workers. However, unlike the previous generations of Mexican families at Limoneira, housing Bracero workers in permanent company housing did not make financial sense due to several factors, including, the absence of women and children, the constant supply of workers, and improved road network after WWII. Moreover, Braceros preferred to live in the cities of Santa Paula, Saticoy, and Ventura and commute to the orchards and fields for work. Barrios (segregated urban Mexican housing) began to appear in cities throughout California and the United States during this period, including Santa Paula and Ventura. The majority of Limoneira's workers lived in a section of Santa Paula which existed largely as a segregated Mexican neighborhood as early as 1920 (McBane 2001: 270).

During the Bracero period Limoneira redesigned the campos to house white families or the increasing number of Mexicans who had become field forman or superintendents. The company demolished some campos at this time, as the need for large scale housing became less important. As the Bracero program came to an end, Limoneira continued to make adjustments to its labor housing. Today, camps exist in various stages of their development. Some campos, such as Camp 100, look nearly identical to when they were originally constructed. Most of the Camps in Wheeler Canyon (Camp 200-500 and 900) have no buildings, but the retaining walls, plumbing, and other site

features remain intact. Some camps have been converted into trailer parks (Camp 600) or had new houses added along with the historic/original buildings (Camp 800).

Irrigation

Improved irrigation proved essential in transitioning the Santa Clara River Valley away from dry farming and toward high-value irrigated crop production. Active diversion and use of surface flows of the Santa Clara River and its tributaries took place primarily during the 1860s and 1870s. The two most important surface diversions in the Santa Clara River valley were the Farmer's Ditch and the Thermal Canal (Freeman 1968:18).

During the early 1860s, landowners partnered with adjacent farmers to construct small scale water diversion ditches throughout the valley. In 1869, E.B. Higgins and E.S. Wooley established a diversion canal on Santa Paula Creek with the intent of powering a grist mill. The grist mill operated at the corner of North Ojai Road and Bedford Street, at the current site of Mill Park, until it closed in 1872 (Freeman 1968:12). A group of landowners on the north side of the Santa Clara River between Santa Paula and Ventura formed the Farmers Canal and Water Company in 1869. These landowners purchased the rights owned by Higgins and Wooley for the grist mill and began construction of what became known as Farmers Ditch. Farmers Ditch ran down the center of the valley crossing Telegraph Road several times before returning to the Santa Clara River (Freeman 1968: 15).

The first company to prepare a commercial groundwater pumping facility in the Santa Clara Valley occurred in 1898, when the Farmers Canal and Water Company contracted with the Keystone Mining and Manufacturing Company to provide 1800 gallons of water per minute to Farmers Ditch. The Keystone Mining and Manufacturing Company constructed a well and steam pumping plant on the north side of Farmers' Ditch north of downtown Santa Paula, where a 16-inch steel pipe originated and ran along Palm Avenue where it connected to the Farmers' Ditch 22-inch pipeline distribution system (Freeman 1968:27). Groundwater pumping today is the predominant method for supplying water to the valley's irrigated crops. The groundwater flows through many of the surface ditches originally built to transport surface water from the creeks and Barrancas that flow south out of the foothills. Pumphouses are located throughout the valley to supply water at various points along the irrigation systems.

In 1893, several of the largest landowners in the valley, including the owners of the Limoneira Company, established the Thermal Belt Mutual Water Company. In the same year, Limoneira installed approximately five miles of 20-inch or 22-inch diameter clay and riveted pipe from a diversion site on Ojai Road westerly to Wheeler Canyon Barranca. In 1917, the Thermal Belt company pipeline was replaced with 26-inch reinforced concrete pipe. By this time, Limoneira had already installed a system of irrigation meters. This system of pipes and meters, or Keller Thompson (K.T.) system, used concrete pipes, weir boxes, and valves to allow citrus farmers to scientifically measure the amount of water each tree was receiving (Hytrometric Company 1917). Like other technologies, this type of irrigation system was advertised and promoted through industry publications like the *California Citrograph* and became commonplace throughout Southern California's citrus region. Few complete, operational systems of this kind remain today.

Architecture

The building types and architectural styles in the Santa Clara River Valley all date from the American Period. The majority of architectural styles and construction techniques share similarties with Southern California rural architecture more broadly. American Period Architecture in rural Southern California can generally be broken up into four periods: the Victorian Period (1865-1920), the Craftsman Period (1910-1930); the Revival Period (1920-1940); and the Modern Period (1925-1968). Architectural styles from different periods tend to overlap and some buildings share stylistic elements from multiple periods.

The Victorian Period refers to the time period during the reign of Queen Victoria (1837-1901), rather than a specific style of architecture. There are several styles of architecture which became popular in America during the latter part of this period, starting at the end of the Civil War in 1865 and faded from popularity around 1920. The greatest influence on architecture in this period was the Industrial Revolution and the transportation of raw materials and manufactured building materials by rail. Mass-produced raw materials included light 2-inch boards and wire nails, which directly contributed to a decline in heavy post and beam buildings, and the emergence of balloon frame construction. This allowed for the rapid and inexpensive erection of residential buildings by small contractors and did not require the same master builders or construction techniques of earlier periods. Architectural styles that emerged during this period tended to mirror the “picturesque” design of pre-industrial Europe. The most striking examples in the Santa Clara River Valley include prominent examples of farm houses built in the Italianate and Queen Anne styles. Examples of Eastlake and Stick architecture are also present in more modest examples. Some buildings also include features of the Richardsonian Romanesque architecture. Perhaps the most common architectural style from this period in the Santa Clara River Valley is the Folk Victorian. Folk Victorain style buildings are present in both larger farmhouses and smaller employee residences.

Craftsman architecture was the most popular architectural style in southern California in the 1910s and 1920s. The Arts and Crafts movement originated as a reaction to the Industrial Revolution. The style itself was an artistic juxtaposition to the ornate styles popular during the Victorian Period. The Craftsman style is heavily influenced by Charles Sumner Green and Henry Mather Greene, who practiced in Pasadena, California from 1893 to 1914 (McAlester 1984: 454). The Craftsman style stresses a natural relationship of the building to its surrounding landscape. Exposed wood, brick, and stone were common features of the Craftsman style. The emergence of the Craftsman Style in Southern California coincided with a period of unprecedented growth of the citrus industry causing the style to become permanently linked with the images of Southern California propogated by grower cooperatives. Examples of the Craftsman style in the Santa Clara River Valley range from modest bungalows to large estates. Examples of the Craftsman style was exemplified in Limoneira company housing, as shown in **Cultural Resources Figure 56** and **57**.

The Revival period encompasses a range of architectural reinterpretation from Europe and the American colonies from 1920 until 1940. The revival architectural styles were largely influenced by soldiers returning from Europe, who reimagined the architectural landscape in the United States. Using modern building techniques and technologies, these styles were further promoted by American architects trained in the tradition of the *l'Ecole des Beaxu Arts* (Beaux Arts School). The Beaux Arts School trained architects from around the world in the interwar period that practiced a literal interpretation of European architectural precedents. Specific to California and the Southwest during this period were reinterpretations of Spanish colonial styles, including the California Mission, Monterey, and Spanish Colonial architecture. In the Santa Clara River Valley there are several examples of revival architectural style represented in both residential, comericial, and educational facilities.

Modernism broadly encompasses a variety of design movements emphasizing innovative expression through simplicity in form. Early Architectural styles that emerged during this period include Streamline Moderne and Art Deco. Streamline Moderne architects sought to achieve dramatic impact using the most efficient means possible. Streamline Moderne embraced aerodynamic forms associated with industrial innovation. Art Deco was first introduced in Paris and featured prominently at that city's 1925 World Fair. Art Deco combined updated interpretations of ancient cultures with modern building technologies. The movement that emerged later in this period which became known as the Mid-century Modern is a combination of architectural styles from the modern period. In the Santa Clara River Valley modern architecture occurs mainly around the periphery of Ventura, Saticoy, and Santa Paula; and in the industrial area around Mission Rock road. Broadly speaking, modern buildings do not tend to be associated with agriculture or petroleum industries in the Santa Clara Valley and do not contribute to its historical significance.

Transportation

The agricultural and petroleum industries in the Santa Clara River Valley and surrounding foothills were restrained until improvements we made to local transportation systems at the end of the 19th century (Treim 2015:5). Wharves at Hueneme and Ventura in the early 1870s provided the first reliable deep water ports for shipping throughout costal California. These ports were more directly connected to the valley in 1887 when the Southern Pacific Railroad completed the Santa Paula Branch Line. Along the route, the towns of Piru, Fillmore, and Bardsdale appeared soon after Southern Pacific established stations at those locations (Brower 2001:1).

The Transcontinental railroad was completed in 1869, connecting San Francisco to the Eastern United States. This event opened up eastern markets to California products and raw materials. The Southern Pacific Railroad completed the Southern California extension in 1876, and this became the largest driver of growth in the region during this time period. The Atchison, Topeka and Santa Fe Railroad completed its line to Los Angeles in 1885 and the two railroads competed with each other to bring passengers to Southern California. In 1887, the Southern Pacific completed its first line into Ventura County (Ventura 1996:10-11).

The Southern Pacific Branch Railway Company, a subsidiary to Southern Pacific, surveyed the Santa Clara River Valley in 1886 with the intent of identifying a route to connect the Newhall line in Santa Clarita with the Coastal rail route that passed through Ventura. The surveyors chose a route, and construction of the branch line between Ventura and Santa Clarita began in 1886. Newspaper accounts describe how Chinese laborers provided the primary manpower to construct the line (Brower 2001:1).

The Southern Pacific Railroad undertook a targeted and sophisticated marketing campaign between 1875 and 1890 to lure settlers to Southern California (Parker 1937:103). The company engaged in an intensive advertising campaign targeted at settlers in the United States and overseas with the goal of convincing them to migrate to Southern California. Land agents were distributed throughout eastern markets as well as various state immigration and land agencies (Parker 1937:108).

Along with the railroad transportation, the original road network played an important role in the development of the Santa Clara River Valley. These include the formal roads, such as Darling Road, Telegraph Road, Foothill Road, Olive Road, Santa Paula Street, Cummings Road, and Briggs Road. In addition, the roads running north into the canyons were also important transportation networks. Each farm cluster in the valley also created informal farm roads to provide access to orchards and fields.

Petroleum Development

Petroleum exploration occurred in portions of the Santa Clara Valley as early as 1860. **Cultural Resources Figure 58** shows petroleum development on South Mountain, and mature citrus groves can be seen in the background. Some of the first oil developments in the Santa Paula area occurred in in the former Rancho Ex-Mission lands, where tunnels were drilled horizontally into the hillsides of various canyons (Winter 1945:6). Thomas Bard, a geologist representing Thomas Scott of the Pennsylvania Railroad, arrived in Ventura in 1867 intent on purchasing land for the purpose of extracting oil. By the early 1880s Santa Paula had emerged as the headquarters for Pennsylvania oil developers Wallace L. Hardison and Lyman Stewart. The two speculators established the Hardison and Stewart Oil Company offices on Main Street, Santa Paula in 1886. Hardison and Stewart consolidated several smaller oil companies and formed the Union Oil Company in 1890. Historians have pointed to the oil industry as the primary reason Southern Pacific Railway constructed its branch line through the Santa Clara River Valley (Belknap 1968:119).

The historical development of petroleum on the valley floor is somewhat different from the rapid exploration and development in the surrounding foothills and on Sulphur Mountain, but is related to the significance of agriculture and petroleum to the region. By 1862, George Briggs was the owner of the former Rancho Santa Paula y Saticoy. Briggs' brother-in-law, Edward Haskell, arrived in the valley during the 1860s to assist Briggs and his two brothers with their agricultural pursuits. Following a severe drought in the 1860s and the death of his wife, Briggs became discouraged with the Santa Clara Valley. Briggs subdivided his land and began selling off his holdings. Haskell convinced Birggs that the oil and mineral rights of the plots alone were worth a fortune. In 1864, Briggs sold Haskell all the oil and mineral rights to his land (VCHS 1958:3).

Briggs then began selling plots, without their mineral rights attached, to settlers through his land agent G.B. Higgins. Both Briggs and Higgins neglected to note the previous sale of the mineral rights, and none of the original deeds mention the previous transfer of rights. Despite years of attempting to generate interest in drilling for oil on the valley floor, including founding the Santa Paula y Saticoy Oil Company, Haskell was unsuccessful in establishing any oil wells. By 1916, the landowners had realized they purchased their land without mineral rights, and began to file lawsuits against the company and Haskell. In 1940, after years of litigation, the landowners and Haskell reached an agreement that allowed property owners to purchase back up to one-half of their rights from Haskell.

A year after Haskell and the landowners reached the mineral rights agreement; Shell Oil Company acquired leases for 3,000 acres on the former rancho lands and commenced drilling operations in 1941. WWII delayed further development, but by the mid-1950s Shell had established over thirty producing wells on the property, which later became known as the Saticoy Oil Fields (VCHS 1958:10). These oil jacks, pipelines, and tanks are concentrated between the Southern Pacific Railroad Tracks and the Santa Clara River, and between the towns of Saticoy and Mission Rock Road.

The Saticoy Oil Field on Orchard Farm can be understood within the broader context of petroleum exploration and development in Ventura County, and Santa Paula in particular. Some of the first and most aggressive petroleum exploration in the state took place in the foothills surrounding Santa Paula. Historian Michael Belknap noted that by 1875, “Santa Paula was considered the hub of the Ventura County petroleum industry. [And by 1890 was] the recognized center of the California Oil industry” (Belknap 1968:119). The delayed development of the Shell Saticoy Oil Field is directly linked to agriculture through both Briggs and Haskell, and the historical connection of agriculture and petroleum industries in the valley.

SANTA CLARA VALLEY RURAL HISTORIC LANDSCAPE

Introduction

The proposed Mission Rock project is located in a portion of the western Santa Clara Valley that has been nominated and listed on the Ventura County Landmarks and Points of Historical Interest as a historic district. The district is a contiguous historic landscape with several overlapping themes centered around citrus and other agricultural land uses. Rural historic landscapes are defined geographical areas that historically have been used by people, or shaped or modified by human activity, occupancy, or intervention. Rural historic landscapes must also possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features (McClelland et al. 1999:1-2).

Period of Significance

The period of significance is the span of time when the landscape was associated with important events, activities, persons, cultural groups, and land uses, and the period when the landscape attained important physical qualities or characteristics.

The period of significance begins with the date of the earliest land use or activity that has importance and is reflected by historic characteristics today. The period of significance ends with the date when events, activities, and construction having historic importance end. If a specific closing date cannot be identified, fifty years ago may be used as the date the period of significance ends (McClelland et al. 1999:21).

The 1996 survey and district record defined the period of significance as 1860-1946. The period of significance begins in 1860, when T.W. More commissioned W.D. Hobson to build the adobe residence on Orchard Farm, which served as More's agricultural headquarters in the valley. The landscape is used today primarily for the same activities for which it is significant, and therefore the original district record measured back 50-years from the date the survey was completed, to serve as the end of the period of significance at 1946. Applying this same methodology today, the period of significance begins in 1860 and ends in 1967.

Statement of Significance

The western Santa Clara Valley is significant under NRHP Criterion A and under CRHR Criterion 1 for its reflection of the growth and development of agriculture during its period of significance (1860-1967). The district illustrates the historical development of agricultural products and farming techniques, and documents the progression of this land use from dry farming that included grains and row crops, to irrigated tree crops and citrus ranching. The district also illustrates the historic use of the land within the adjacent canyons for cattle and tree crops.

The district is also significant under NRHP Criterion C (design) and under CRHR Criterion 3 as one of the best preserved examples of a mature Southern California citriculture landscape. The district possesses a significant concentration of buildings, structures, objects, and sites related to this land use, including the use of land for agriculture. The district is important as a representation of the human designed landscape of agriculture in the specific historical form, pattern, and arrangement of buildings, structures, and objects. These physical elements, taken together, contribute to the interpretation of citriculture in California. A wide variety of architectural styles and building types from the period of significance also serve to illustrate the development of agriculture as both a family farming and agribusiness enterprise.

District Boundaries

Boundaries for rural historic landscapes must encompass the area having historical significance and contain contributing resources that express the characteristics of the historic landscape that express the purpose the landscape is significant (McClelland et al. 1999:24). The original Western Santa Clara Valley survey, described the survey area boundaries as "generally bounded on the south by the Santa Clara River, on the north by the Sulpher Mountain foothills, on the east by Peck Road, and on the west by Wells Road. Also included are Aliso Canyon, Wheeler Canyon, O'Hara Canyon, and Adams Canyon" (Triem and Stone1996: 8). The SCVRHD boundaries include the entire western Santa Clara Valley (Triem and Stone 1996: Appendix F).

Applying the methodology from the *National Register Bulletin Guidelines for Evaluating and Documenting Rural Historic Landscapes* to identify areas of the valley that contain elements which contribute to the historical themes that make the landscape significant, **Cultural Resources Figure 7** represents the SCVRHD landscape boundaries as they exist today. These boundaries were summarized in the original district record as, "generally bounded on the south by the Santa Clara River, on the north by the Sulpher Mountain foothills, on the east by Peck Road, and on the west by Wells Road. Also included are Aliso Canyon, Wheeler Canyon, O'Hara Canyon and Adams Canyon" (Triem and Stone 1996: District Record).

Identification and Documentation

The built environment PAA for the Mission Rock project is smaller than the historic landscape as a whole. Since potential project impacts are limited to the area around the project, staff has focused identification efforts within the boundary established by the CEC Power Plant Siting Regulations (0.5 miles from the entire project footprint for built environment resources).

The first step to documenting a historical rural landscape is developing a thematic historic context based on common themes and periods of time in a geographical area (Melnick 1984:34). This thematic historic context expanded on the work completed during the initial survey of the Western Santa Clara Valley in 1996. The historic themes identified in 1996 included agriculture, irrigation, transportation, and the petroleum industry (Triem and Stone 1996:1-8). The Cultural Resources analysis in the PSA expands on these themes through new research using both primary and secondary sources available from local, regional, and state-wide repositories. This research has led to a further refinement of the existing thematic context established in 1996.

Using the thematic historic context as a framework, a series of specific steps were undertaken to complete the survey update of the section of the landscape that the proposed Mission Rock project is most likely to impact. Specifically, these steps included:

1. Develop resource types that are likely to fit within the historic themes which make the historic landscape significant. Determine what character defining features each type of resource is likely to include, and develop a statement of significance for each resource type.

2. Contact property owners for permission to access each parcel in the survey area.

3. Plan fieldwork using current historic resource reports, historic maps, and aerial photographs.

4. Conduct fieldwork with the goal of documenting all contributing landscape features.

5. Prepare documentation forms and survey results.

Contributing Resource Types

The historic landscape includes a concentration of buildings, structures, and sites related to the history of agriculture and petroleum in Southern California. The contributing resources are comprised of resources identified in the 1996 district record, and during survey work performed during 2016-2017 by Commission Staff and the applicant for the proposed Mission Rock Energy Center project. **Cultural Resources Figure 6** and **Cultural Resources Table A4** include all historic resources previously documented, documented by the applicant, and documented by staff within the PAA.

Buildings

Residential buildings represent the diversity of the people who shaped the landscape, including affluent farmers from around the country, modest pioneers, and immigrant labor. Ranch houses are the principal residential dwellings in the Santa Clara River Valley and were largely constructed or commissioned by landowners. The construction of residences reflects the family-owned character of large portions of the valley's citrus ranching operations. The size, quality, style, and construction method of the primary ranch houses vary widely. Some early ranches were established with modest dwellings from the Victorian-period, which were later supplemented by more expensive, elaborate residences as the region benefited from the profitable citrus and petroleum industries. As the children of ranching families reached adulthood, aging parents often subdivided holdings and new residences were constructed in architectural styles popular in later eras, most notably the Craftsman style. The siting of individual ranch buildings was affected by a variety of factors, including natural features, the Valley's transportation network, size and shape of individual parcels, crop types, and the building and farming traditions brought by settlers from elsewhere.

Labor housing is the second most common housing type in the valley, present on both family farms and large agribusiness ranches. A wide variety of ethnicities provided farm labor that was both seasonal and year-round, reflected in the types of resources found in the district. Bunkhouses were constructed for the use of single men, while labor camps provided family housing. The majority of citrus ranches located in the Valley provided worker housing for ranch employees due to the relative remoteness of the crops to other housing. Camp 800, the Sharp-Thille Farm, and Orchard Farm contain clusters of workers housing complexes. Other farms contain a single employee residence, such as Edwards Ranch.

Barns and packing houses became an essential feature of the citrus landscape in Southern California. Only the largest citrus ranches maintained private packing houses on their own land, while small operations depended on the cooperative packing houses within Santa Paula and Saticoy. Packing house design becoming more scientific as the industry matured reflected the specific procedures for preparing oranges, lemons, and walnuts for markets.

Certain purpose-built outbuildings contribute to the district's significant historical themes. Processing buildings, such as walnut dehydrators are reminders of the important role this crop played in the development of the Santa Clara River Valley. Box sheds and garages were built to store equipment and vehicles.

Rural schools were built for children of the white owners and the Mexican laborer population. The Briggs School District served the valley's white children, while the smaller Eliseo School District, in Wheeler Canyon, housed the minority population (McBane 2001:282). **Cultural Resources Figure 11** includes both previously documented historic buildings, and historic buildings within the built environment PAA identified by the applicant and staff.

Structures

Irrigation in the Santa Clara River Valley proved a vital piece of infrastructure needed to transform the valley from ranches and dry farming into an important center for citrus cultivation and innovation. The Santa Clara River Valley is unique in Southern California's citrus belt for its relatively reliable surface flows provided by the Santa Clara River and creeks that flow out of the Sulphur Mountain foothills north of the valley. As early as 1872, property owners began to construct diversion features such as the Farmers Ditch and Thermal Belt Company canal. Irrigation features began as open ditches and flumes constructed of redwood, but the system was later converted to underground concrete pipes known as the K.T. Irrigation system. Roadside ditches remain along roadsides and continue to divert rain and irrigation runoff. Some ditches are lined with the abundant river rock available in the area. The K.T. Irrigation system of pipes, weirs, penstocks, reservoirs and pumphouses exists throughout the district and convey the importance of water to the agricultural operations in the valley. Water towers and cisterns are common features identified as important elements in the original survey report (Triem and Stone 1996: District Record). Three distinct irrigation systems were identified within the built environment PAA. The visible features of these systems are included on **Cultural Resources Figure 6**; however, much of the irrigation system is below grade.

Roads and railroads are representative of the transportation systems in the Valley, which provide the means for transporting both petroleum and agricultural products to market. The 1867 W.H Norway land survey established the original layout for the road system that remains today. Primary examples include Telegraph Road and Foothill Road, the main east-west thoroughfares through the district. North-south roads, including Cummings, Briggs, Olive, and Wells roads, follow the 1867 survey demarcations. These roads became property boundaries for the citrus ranches and orchards that came to dominate the landscape. Originally surveyed during the 1860s, the Southern Pacific completed construction of the railroad through the valley in 1887. The rail line transformed the valley, bisecting the 1867 survey grid with a new diagonal boundary that gradually affected ownership. Additionally, the Limoneira Company's spur line traversed the valley from south to north, providing an additional feature on the landscape to service the Valley's largest grower.

The Santa Clara Valley branch line through the Santa Clara Valley to Ventura was completed in 1887. There are two extant stations, one in Santa Paula and one in Saticoy, both of which were constructed of matching designs from standard Southern Pacific station patterns of the period. The arrival of the Southern Pacific Railroad in the Valley brought a settlement boom to the area with the introduction of building materials which led to increased immigration and construction of many of the older homes we see today.

The line began in Saugus and ended in Ventura. When the Southern Pacific reached Santa Paula, both the petroleum and citrus industry grew as a result of access to reliable transportation (Triem and Stone 1996: 6). The railroad right-of-way cut diagonally across the Valley in 1867 and came to represent a new landscape boundary.

The petroleum pumps and features within the built environment PAA are associated with the Saticoy Oil Field. The Shell Oil Company owned and operated the Saticoy Oil Field from 1955 to 1984. Staff's analysis of historical aerial photographs from this period reveals that oil sumps and wells within the Saticoy Oil Field were added and removed over time. A more detailed discussion of the Saticoy Oil Field and the history of oil in the valley and the Santa Paula region are included in the thematic historic context, including a discussion of their contribution to the rural historic landscape as it is experienced today. The remaining features of the Saticoy Oil Field systems are shown on **Cultural Resources Figure 6**; however, much of the system is below grade and has not been recorded.

Additional structures that contribute to the landscape are fences, walls, and corrals that were constructed in connection with development of the Valley for agriculture, particularly in the canyons. Boulders were occasionally used to construct walls along the northern foothills that served at times as boundary demarcations, retaining walls, and irrigation features. These resources have been recorded and included in **Cultural Resources Figure 6**.

Sites

The predominant feature defining the historic landscape of the valley is the use of the land itself for agriculture, particularly tree and row crops. Orchards in the valley follow the historic techniques developed by growers throughout Southern California and propagated by grower cooperatives, like the United Fruit Growers Exchange, and in industry publications like the *California Citrograph.* These techniques have produced a variety of trees planted in regularly spaced rows, with wider rows introduced at greater intervals to allow for picking, spraying, and frost prevention. Between each tree row, shallow irrigation ditches provide for gravity flood irrigation and drainage with water brought from the irrigation system at the orchard perimeter. The trees themselves have been the subject of constant replacement due to age, damage by pests, disease, or periodic freezing.

Agriculture in the Valley has always been defined by crop diversification. While the district may appear at times to be a citrus monoculture consisting of lemons, and oranges groves, these orchards share the landscape with a variety of row crops. Diversification of crops provided several important benefits for growers. Crop variety protected growers from price variations, adverse weather, and uncertainties associated with citrus experimentation. Valley growers realized the persistent and strong costal breezes could damage citrus, particularly on the valley floor. To avoid this effect, growers planted treerows of blue gum eucalyptus and to a lesser extent poplar trees. These treerows played a particularly important role in lemon production, by reducing wind abrasion to the skin of the fruit (Lunderno 1921:6).

Gardens and ornamental landscaping are common features of the historic landscape. These resources are typically located in close proximity to residential buildings. Family ranches typically set aside a small plot of land for growing vegetables and fruit, a reminder of the time when farming was primarily a subsistence occupation. Gardens planted near labor housing camps likewise reflected the preferences and traditions of the workers' home countries. The planting of exotic trees and gardens around the ranch residences and along residential driveways made unambiguous statements about the prosperity of the rancher, the abundance provided by the Valley, and validated the romantic image that defined citrus in Southern California. **Cultural Resources Figure 6** includes some depictions of gardens, ornamental landscape resources, and treerows.

Development Patterns

Immigration and events are two primary influences on property boundaries in the valley. The earliest and most comprehensive land survey and subdivision of Rancho Santa Paula y Saticoy was the 1867 W.H. Norman survey, which divided the Rancho into roughly 150-acre square-shaped parcels using a baseline which bisected the Valley from east to west. This grid, which runs at roughly a 45 degree angle to the townships and ranges used by the Public Land Surveys, can be seen today and underlays the current organization of property boundaries and roads. Natural features did not greatly influence the Norman survey of the Santa Clara River Valley, with the exception of the Santa Clara River itself, which forms the southern boundary. The barrancas became demarcations of property boundaries in subsequent land divisions. The northern edge of the Valley, including the canyon areas, was part of the Rancho Ex-Mission San Buenaventrua. In these areas, the Valley's land division seems to have been influenced by the land contours and water sources, as opposed to the survey lines of the Rancho Santa Paula y Saticoy. **Cultural Resources Figure 8** includes the three primary subdistricts identified by the applicant that overlap with the built environment PAA. **Cultural Resources Figure 5** shows where the applicant was granted access to conduct survey work. This figure helps explain the lack of resouces east of Ellsworth Barranca, between Telegraph Road and Foothill Road due to lack of accces.

BACKGROUND RESEARCH

The following tables, **Cultural Resources Table A3** through **A6**, represent the information and sources staff consulted in the course of conducting its independent analysis.

Cultural Resources Table A3
Literature Review Results within 1 Mile of MREC

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to MREC PAA	Resources Identified
VN-00127	An Archaeological and Historical Assessment of Areas Within the Takelines of the Proposed Features of the Ventura County Water Management Project	Clelow	Institute of Archaeology, University of California Los Angeles	1978	Within	N/A

Cultural Resources Table A3
Literature Review Results within 1 Mile of MREC

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to MREC PAA	Resources Identified
VN-00494	Cultural Resources Survey and Impact Assessment for an 8+ Acre Property near Saticoy (Parcel No. 64-27-24), Ventura County, California	Singer	Unknown	1986	Within	0
VN-01265	Cultural Resource Studies for the Proposed Pacific Pipeline Project	Reed	L.W. Reed Consultants, Inc.	1992	Within	60
VN-01776	Ventura County Todd Road Jail Site: Phase Two Cultural Resources Assessment	Triem	San Buenaventura Research Associates	1990	Within	3
VN-01777	Todd Road Jail Project	Cooley	Theodore Cooley	1989	Within	1
VN-01801	A Cultural Resource Evaluation for the Santa Paula Branchline Recreational Trail Master Plan, County of Ventura, California	Wlodarski	Historical, Environmental, Archaeological Research Team	1999	Within	13
VN-02643	Todd Barranca Embankment Project (Flood Protection for Todd Road) Hazard Mitigation Grant Program, Project #1008-6077, County of Ventura	Fukutomi	Federal Emergency Management Agency	2000	Within	0
VN-02864	Report on the Backhoe Trenching of Potential Cultural Resource Sites	King	Peak & Associates	1993	Within	7
VN-02872	TEA-21 Rural Roadside Inventory: Native American Consultation and Ethnographic Study for Caltrans District 7, Ventura County	Fortier	University of California San Diego Department of Anthropology	2009	Within	
VN-02917	Phase I Cultural Resources Assessment: Santa Paula Recycled Water Project Phases 1A, 1B and 2, Santa Paula, Ventura County, California	Drover and Maxon	BonTerra Consulting	2010	Within	9
VN-00421	Unknown	Anonymous	Unknown	1982	Outside	Unknown
VN-00781	Unknown	Singer and Atwood	Unknown	1989	Outside	Unknown
VN-00785*	Unknown	Maxwell	Unknown	1989	Outside	Unknown
VN-01193*	Unknown	Valentine-Maki	Unknown	1992	Outside	Unknown

Cultural Resources Table A3
Literature Review Results within 1 Mile of MREC

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to MREC PAA	Resources Identified
VN-01262*	Unknown	Maxwell	Unknown	1992	Outside	Unknown
VN-01626*	Unknown	Taraglia	Unknown	1998	Outside	Unknown
VN-01843*	Unknown	Maki	Unknown	2000	Outside	Unknown
VN-02085*	Unknown	Maki	Unknown	2001	Outside	Unknown
VN-02265*	Unknown	Schmidt	Unknown	2004	Outside	Unknown
VN-02304*	Unknown	Whitley	Unknown	2006	Outside	Unknown
VN-03064*	Unknown	Switalski and Bardsley	Unknown	2012	Outside	Unknown
VN-02774	Archaeological Survey Report for the Proposed Telegraph Road Bridge (52C0076) Scour Protection Project Located Along Telegraph Road over Ellsworth Barranca, County of Ventura, California	Wlodarski	Historical, Environmental, Archaeological, Research Team	2007	Within	0

Cultural Resources Table A4
Literature Review Results: Previously Recorded Cultural Resources

Resource Identifier	Site Components	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to MREC
P-56-001051H	Historic trash scatter	7/6/1989	Unknown	~0.5 mi northwest
P-56-100223	Isolate sandstone mortar fragment	7/5/1989	Not recommended eligible	~0.25 mi northwest
P-56-152520	Pardee Ranch	July 1996	Eligible	~1.9 mi northwest
P-56-152521	Hubert Edwards Residence	July 1996	Eligible	~1.8 mi northwest
P-56-152522	Milton Teague Ranch Main Residence & Guesthouse & Employee Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152534	Fred Outland Residence	July 1996	Eligible	~1 mi northeast
P-56-152553	Betram Lee Hawley Residence	July 1996	Eligible	~2.4 mi northwest

Cultural Resources Table A4
Literature Review Results: Previously Recorded Cultural Resources

Resource Identifier	Site Components	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to MREC
P-56-152554	Tom Parker Ranch Main Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152555	Tom Parker Ranch - House	July 1996	Eligible	~2.3 mi northwest
P-56-152556	Tom Parker Ranch Employee Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152557	Lee Carrol Hawley Residence	July 1996	Eligible	~2.3 mi northwest
P-56-152558	Sharp-Thille Ranch (Main Residence)	July 1996	Eligible	~ 2.0 mi northwest
P-56-1525559	Sharp-Thille Rancho Office and Residence & Quonset Hut Office	July 1996	Eligible	~2.1 mi northwest
P-56-152560	Sharp-Thille Employee Housing	July 1996	Eligible	~2.1 mi northwest
P-56-152561	Sharp-Thille Employee Housing	July 1996	Eligible	~2.1 mi northwest
P-56-152562	Steele Ranch	July 1996	Eligible	~2.1 mi northwest
P-56-152563	Thomas W. Harwood Residence	July 1996	Eligible	~2.0 mi northwest
P-56-152595	Beckwith Ranch	July 1996, Updated 3/11/1999	Eligible	~0.5 mi northwest
P-56-152635	Edwards Ranch/Orchard Farm District	July 1996	Eligible	~1.3 mi west
P-56-152636	Edwards Adobe (More Adobe)	July 1996	Eligible	~1.3 mi west
P-56-152637	Row of Connected Buildings, School	July 1996	Eligible	~1.3 mi west
P-56-152638	Office	July 1996	Eligible	~1.3 mi west
P-56-152639	Residence #7	July 1996	Eligible	~1.3 mi west
P-56-152640	Residence #8	July 1996	Eligible	~1.3 mi west
P-56-152641	Residence #9	July 1996	Eligible	~1.3 mi west
P-56-152642	Residence #10	July 1996	Eligible	~1.3 mi west

Cultural Resources Table A4
Literature Review Results: Previously Recorded Cultural Resources

Resource Identifier	Site Components	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to MREC
P-56-152643	Barn	July 1996	Eligible	~1.3 mi west
P-56-152644	Barns (On Edwards Ranch)	July 1996	Eligible	~1.3 mi west
P-56-152645	Implement Shed	July 1996	Eligible	~1.3 mi west
P-56-152647	Barn (On Edwards Ranch)	July 1996	Eligible	~1.3 mi west
P-56-152648	Employee Residence and Barn (On Edwards Ranch)	July 1996	Eligible	~1.0 mi west
P-56-152649	Roger G. Edwards Residence (On Edwards Ranch)	July 1996	Eligible	~0.8 mi west
P-56-152653	Limoneira Ranch	July 1996, Updated 5/8/1997	Eligible	~1.85 mi north
P-56-152695	Aliso Village – Camp 800 (Limoneira Ranch)	July 1996	Eligible	~2.2 mi north, northwest
P-56-152698	Harwood Ranch (Limoneira Ranch)	July 1996	Eligible	~2.0 mi northwest
P-56-153060	Santa Clara-Ojai-Santa Barbara 66kV Transmission Line	September 2012	Not Eligible	~4.4 mi northwest
P-56-153068	Santa Clara Substation	September 2012	Not Eligible	~4.6 mi northwest

Cultural Resources Table A5
Historic and Aerial Maps Consulted

Map Name	Scale	Survey Date	Reference
Plat Showing Location of the Santa Clara Water and Irrigating Company's Ditches as Surveyed in 1882	N/A	1882	Stow, J.T. Co., 1882. Plat Showing Location of the Santa Clara Water and Irrigating Company's Ditches. Santa Clara Water Co. vs. Johannes Borchard, Exhibit A-575., Museum of Ventura County, Court Records.
Burson Rancho: East End of Tract No. 1, Rancho Sespe	2 chains to 1 inch	1888	Barry, J.A., 1888. Burson Rancho: East End of Tract No. 1, Rancho Sespe, Ventura County, CA. Museum of Ventura County, Court Records, scale 6 chains: 1 inch.
Briggs Sheet No. 2 Saticoy Road District Map	6 Chains: 1 Inch	1915	Briggs, George G., 1915. Briggs Sheet No. 2. Saticoy Road District Map. Length of SPRR 1.5 Miles. Museum of Ventura County, Map Collection, scale: 1:1,000.

Cultural Resources Table A4
Literature Review Results: Previously Recorded Cultural Resources

Resource Identifier	Site Components	Date Recorded/Updated	NRHP/CRHR Eligibility	Location relative to MREC
Map of the Santa Paula Sespe Oil Fields: Including Bardsdale, South Mountain & Camarillo	1 Inch: 1000 ft	1935	Bush, R.D. Bush., 1935. Department of Natural Resources Division of Oil and Gas, Santa Paula Sespe Oil Fields: Including Bardsdale, South Mountain & Camarillo, scale 1:62,500	
USGS 7.5-Minute Quadrangle	1 inch: 62,500 feet	1941	USACE, 1941. Geologic map of the Santa Paula Peak 7.5-minute quadrangle, Ventura County, California. Museum of Ventura County, Map Collection, scale 1: 62,500	
Map of the Santa Paula Sespe Oil Fields: Including South Mountain	1 Inch: 1000 ft	1942	Bush, R.D., 1942. Department of Natural Resources Division of Oil and Gas, Santa Paula Sespe Oil Fields: Including South Mountain. Museum of Ventura County, Map Collection, scale 1:62,000.	
Orchard Chart: Limoneira Company's Property, Santa Paula, Calif.	N/A	1950	Low, K.B., 1950. Orchard Chart: Limoneira Company's Property, Santa Paula, Calif. San Buenaventura Research Associates, Private Collection.	
USGS 7.5-Minute Quadrangle	1 inch: 24,000	1967	USACE, 1967. Geologic map of the Santa Paula Peak 7.5-minute quadrangle, Ventura County, California. Museum of Ventura County, Map Collection, scale 1: 62,500	
Ventura County Surveyor Map	10 Chains: 1 Inch	N.D.	Briggs, George G., 1915. Briggs Sheet No. 2. Saticoy Road District Map. Length of SPRR 1.5 Miles. Museum of Ventura County, Map Collection, scale: 1:1,000.	
Standard Oil Co. Aerial Survey	1:18,000	1928	Fairchild Aerial Surveys, Standard Oil Co., 1928. Aerial Photography Collection, U.C. Santa Barbara Library. Index C-104. Scale 1:18,000.	
U.S. Department of Agricultural Aerial Survey	1:20,000	1938	Laval Company Inc., Fresno, CA: U.S. Department of Agriculture, 1938. Aerial Photography Collection, U.C. Santa Barbara Library. Index AXI-1938. Scale 1:20,000.	
Standard Oil Co. Aerial Survey	1:18,000	1955	Fairchild Aerial Surveys, Standard Oil Co., 1928. Aerial Photography Collection, U.C. Santa Barbara Library. Index C-21970. Scale 1:18,000.	

Cultural Resources Table A6
Built Environment
Inventory of Historic Resources in the Half-Mile PAA

Type	Location	Previously Recorded	Eligible	Citation
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Garden	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Garden	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment		N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Garden	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Equipment	Sharp-Thille Irrigation	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Equipment	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Wind Machine	Wind Machines at Limoneira	N	Y	DR115
Wind Machine	Wind Machines at Limoneira	N	Y	DR115
Wind Machine	Wind Machines at Limoneira	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115

Cultural Resources Table A6
Built Environment
Inventory of Historic Resources in the Half-Mile PAA

Type	Location	Previously Recorded	Eligible	Citation
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Oil Feature	Shell Oil infrastructure	N	Y	DR115
Oil Feature	Shell Oil infrastructure	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	Sharp-Thille Irrigation	N	Y	DR115
Drainage Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	Sharp-Thille Irrigation	N	Y	DR115
Drainage Feature	Sharp-Thille Irrigation	N	Y	DR115
Drainage Feature	Sharp-Thille Irrigation	N	Y	DR115
Drainage Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Irrigation Feature	Edwards/Orchard Farm Irrigation	N	Y	DR115
Building/Structure	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115
Equipment	Edwards Ranch/Orchard Farm	N	Y	DR115

Cultural Resources Table A6
Built Environment
Inventory of Historic Resources in the Half-Mile PAA

Type	Location	Previously Recorded	Eligible	Citation
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Building/Structure	North Limoneira-Aliso Village	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Irrigation Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Fenceline	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Garden	12075 Telegraph - Misc	N	Y	DR115
Drainage Feature	North Limoneira Irrigation	N	Y	DR115
Equipment	North Limoneira Irrigation	N	Y	DR115
Equipment	North Limoneira Irrigation	N	Y	DR115
Garden	Sharp-Thille Ranch Main	N	Y	DR115
Building/Structure	Sharp-Thille Ranch Main	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Irrigation Feature	Sharp-Thille Irrigation	N	Y	DR115
Oil Pipeline	Shell Oil infrastructure	N	Y	DR115
Oil Feature	Shell Oil infrastructure	N	Y	DR115
Oil Feature	Shell Oil infrastructure	N	Y	DR115
Building/Structure	Shell Oil infrastructure	N	Y	DR115
Oil Feature	Shell Oil infrastructure	N	Y	DR115
Building/Structure	1025 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	Williams Canyon	N	Y	AFC (5.3.3)
Building/Structure	West Telegraph	N	N	AFC (5.3.3)
Building/Structure	SPRR Tracks	N	Y	AFC (5.3.3)
Building/Structure	SPRR Tracks	N	Y	AFC (5.3.3)

Cultural Resources Table A6
Built Environment
Inventory of Historic Resources in the Half-Mile PAA

Type	Location	Previously Recorded	Eligible	Citation
Building/Structure	SPRR Tracks	N	Y	AFC (5.3.3)
Building/Structure	SR126	N	N	AFC (5.3.3)
Building/Structure	Edwards Ranch Canal	N	Y	AFC (5.3.3)
Building/Structure	Williams Canyon	N	Y	AFC (5.3.3)
Building/Structure	12025 Foothill Road	N	N	AFC (5.3.3)
Building/Structure	11431 Foothill Road	N	N	AFC (5.3.3)
Building/Structure	910 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	12025 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	936 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	730 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	842 Mision Rock Road	N	N	AFC (5.3.3)
Building/Structure	554 Todd Road	N	N	AFC (5.3.3)
Building/Structure	11475 Foothill Road	N	N	AFC (5.3.3)
Building/Structure	555 Rancho Vista Lane	N	Y	AFC (5.3.3)
Building/Structure	Foothill Road	N	N	AFC (5.3.3)
Building/Structure	Foothill Road	N	N	AFC (5.3.3)
Building/Structure	Foothill Road	N	N	AFC (5.3.3)
Building/Structure	12403 Darling Road	N	N	AFC (5.3.3)
Building/Structure	Foothill Road near Elizabeth Road	N	N	AFC (5.3.3)
Building/Structure	1202 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	899 Mission Rock Road	N	N	AFC (5.3.3)
Building/Structure	910 Barr Highlands Lane	N	N	AFC (5.3.3)
Building/Structure	925 Rancho Vista Lane	Y	Y	AFC (5.3.3)
Building/Structure	Santa Clara Substation	Y	Y	AFC (5.3-2)
Building/Structure	560 Todd Road	Y	N	AFC (5.3-2)
Building/Structure	11975 West Telegraph	Y	Y	AFC (5.3-2)
Building/Structure	11845 West Telegraph	Y	Y	AFC (5.3-2)
Building/Structure	11716 Foothill Road	Y	Y	AFC (5.3-2)
Building/Structure	Guesthouse	Y	Y	AFC (5.3-2)
Building/Structure	Employee Residence	Y	Y	AFC (5.3-2)
Building/Structure	Fred Outland Ranch	Y	Y	AFC (5.3-2)
Building/Structure	Padree Ranch	Y	Y	AFC (5.3-2)
Building/Structure	Hubert Edwards Rexidence	Y	Y	AFC (5.3-2)
Building/Structure	Bertram Lee Hawley Residence	Y	Y	AFC (5.3-2)
Building/Structure	Tom Parker Ranch	Y	Y	AFC (5.3-2)
Building/Structure	Tom Parker Employee Residence	Y	Y	AFC (5.3-2)
Building/Structure	Lee Carol Hawley Residence	Y	Y	AFC (5.3-2)
Building/Structure	Limoneira Co. Camp 800	Y	Y	AFC (5.3-2)
Building/Structure	Limoneira Co. Camp 100	Y	Y	Staff
Site	See Figure 6	Y	Y	Staff

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project	Description	Location	Impacts/Potential Impact
Todd Road Jail Evidence Storage Building, PL14-0125	Adjustment to CUP 4735-2 to authorize a 20,000 sq. ft. evidence storage building at the Todd Rd Jail.	600 Todd Rd, Santa Paula	Construction of the Ventura County Jail in 1999 resulted in ground disturbance and potentially affected buried archaeological resources.
Todd Road Jail Medical Wing Expansion	60,000 sq. ft. of a medical wing.	600 Todd Rd, Santa Paula	Future expansion of the Ventura County Jail will result in ground disturbance and could potentially affect buried archaeological resources.
Santa Paula West Business Park Specific Plan (SPWBPSP), 3-CDP-04	Mixture of light manufacturing, research and development, professional office and supporting commercial uses. Proposed on 53-acres of agricultural land.	Telegraph Rd & Beckwith Rd, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Calpipe Phase 2, 13-CDP-05	New 30,000 sq. ft. industrial building.	957 Calpipe Rd, Santa Paula	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
O'Kote Pipe Factory Project, 15-CDP-06	CDP request for 52,000 sq. ft. industrial factory. 120,800 sq. ft. surface lot for on-site parking for 111-vehicles. Parcel currently used for agricultural row crops; half of the parcel proposed for development- other half remain in agricultural production.	630 Todd Ln, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
12-CUP-03	New vehicle parking/maintenance use and eventually a waste disposal operation business.	906 Corporation St., Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
13-CDP-06	Two new commericial/light industrial buildings. 36,000 sq. ft. general light industrial (Phase 2)	100-106 Calavo St., Santa Paula	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
14-DR-10	6 multi-family units	327 Acacia Rd, Santa Paula	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Darling Apartments, PROJ-7166	Mixed Use, 43 apts., 2 live/work units and 2,100 sq. ft. commercial/retail.	11166 Darling Rd. Ventura	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project	Description	Location	Impacts/Potential Impact
Santa Maria Street Industrial Park Development, 12-CDP-05 05-TM-02	571,370 sq. ft., 10 lots.	324 W Santa Maria St, Santa Paula	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Citrus Dr/Citrus II, PROJ-8427	78-unit, 3-story apt building.	11156-1172 Citrus Dr, Ventura	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Crosstown Water Pipeline Project, 10-CI-03	8,065 ft. buried water pipeline to connect discharge pipeline from Steckel Water Conditioning Facility at the Steckel Dr/Santa Barbara St intersection to Pleasant St/10th St intersection. Includes 3 small potable water and storm water pipelines.	Citywide, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Gisler Ranch Mixed Use, PROJ-8428	3-story mixed use development-43 apts. and 1,200 sq. ft. retail.	11101 Carlos St, Ventura	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources
Parklands Specific Plan and Tentative Map, PROJ-4222	CDFW Lake and Streambed Alteration Agreement No. 1600-2014-0170-R5. Alteration of Brown Barranca in the construction of Parklands Development Project (499 residential units, several park spaces on 66.7 acres) in 4 phases.	Southwest of Telephone Rd and Wells Rd intersection, Ventura	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Northbank, PROJ-6270	117 single family homes, 31 affordable triplex/quadplex, 50 apts.	Eastern terminus of North Bank Dr. Ventura	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Habitat for Humanity, 13-CDP-02	Eight, 4-bedroom single family residences.	Trinity Ln and Santa Paula St, Santa Paula	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Westwood/Parklands, PROJ-03829	216 detached homes, 110 attached homes.	Southwest corner of Wells Rd and Telegraph Rd, Ventura	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Rancho Verde Farmworker Housing,	24 farmworker housing apartment units, 2 stories.	Saticoy Ave and Blackburn	Construction of this facility will result in ground

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project	Description	Location	Impacts/Potential Impact
PROJ-10410		Rd, Ventura	disturbance and could potentially affect buried archaeological resources.
Enclave at Northbank, PROJ-4184	84 residential lots, density bonus concessions for 98 residential units consisting of 84 single-family units and 14 multi-family (7 duplexes).	Southeast corner of Saticoy Ave and Northbank Dr, Ventura	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
The Farm (Residential), PROJ-8446	131 single family homes, 34 townhomes, 2 parks and 3 mini parks.	Southeast corner of Telegraph Rd and S Saticoy Ave, Ventura	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
13-CDP-09	37 unit airport condo modification.	1170 Montebello St, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
15-CDP-07	Multi-family dwellings, 11 units.	112 S 12th St, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
14-CUP-03	Truck storage yard	1485 E Main St, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Voelker Property, PROJ-8150	Residential Project- 18 single family homes. APN 088-281-040	8324 Telegraph Rd, Ventura	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
14-CDP-02	44 single family homes	1226 Ojai Santa Paula Rd, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Williams Homes / River Rock Project (City Project No. 2014-CDP-02)	40 new homes and the retention/rehabilitation of the Hardison House main residence and barn/stables. Project requires demo of existing structures (excluding Hardison House, barn/ stables) which are a historical resource. 9.18-acres to remain open space.	1226 Ojai Road, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
10-CDP-01	2,786 sq. ft. caretaker unit, 7,800 sq. ft. warehouse building.	250 S Hallock Dr, Santa Paula	Construction resulted in ground disturbance and potentially affected buried archaeological resources.
Limonera Company -	501-acre site for up to: (1) 1,500	Telegraph Rd.	Construction of this facility

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project	Description	Location	Impacts/Potential Impact
East Area 1 Specific Plan Amendment	residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2-acres of civic uses for school facilities, and 225.3-acres open space and park uses.	and Padre Ln (east of Santa Paula Creek), Santa Paula	will result in ground disturbance and could potentially affect buried archaeological resources.
04-TM-01	19 lot residential subdivision.	Cliff Dr and Forrest Dr, Santa Paula	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
CUP Agricultural Contractor Service and Storage Yard, PL15-0146	Development of 5-acre property with 5,000 sq. ft. ag service building, 6,250 sq. ft. ag building, 100 sq. ft. pump house, two fire suppression holding tanks, two 10,000 gallon domestic water holding tanks, 156,788 sq. ft. of impervious/paved area for truck and equipment staging and storage, and 16,925 sq. ft. of landscaping. Water provided by onsite well and waste water discharged into septic mound system. Accessory office spaces proposed in both buildings.	4300 Santa Clara Ave, Oxnard	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
RiverPark West K-8 Steam School Project	Construction of 78,000 sq. ft. campus on 10.2-acre site (K-8 classrooms, library, administration/multi-purpose facilities). Currently in Phase 1 of 2 Phases.	3001 North Ventura Rd, Oxnard	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
PL16-0085	Relocation antenna within the Conditional Use Permit (SES Americom satellite) control facility. Installation of 9 utility poles (40 ft.) and electrical lines within County right-of-way along the southern and eastern property boundary. Lines to connect with Southern California Edison (SCE) utility lines that serve FAA and future transmission bandwidth needs. One 200 sq. ft. storage shelter.	5990 Solano Verde Rd, Somis	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project	Description	Location	Impacts/Potential Impact
North Pleasant Valley (NPV) Treatment Facility	Construction and operation of groundwater treatment facility, including drilling and production of two new wells, installation of pipelines for distribution of raw well water, product water and brine. Facility to provide treated water to Camarillo's existing service area, with average design capacity of 7,500 acre ft. per yr. of production water.	Las Posas Rd and Lewis Rd, Camarillo	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
La Barranca Residential Project, PROJ-6098	Construction of 9 single-family residences with 3 floor plan types (3,053-3,589 sq. ft. with 64 parking spaces).	5533 Foothill Road, Ventura	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Island View Communities, PROJ-2008	154 apartments, 4 stories, 3.8-acres.	1776 Alameda Ave, Ventura	Construction of this facility is resulting in ground disturbance and could potentially affect buried archaeological resources.
Calleguas Municipal Water District (CMWD) Salinity Management Pipeline	Phase 1- pipeline from Camrosa Water Reclamation Facility in southwestern Ventura County to ocean outfall at Port Hueneme. Phase 2 (Lower Reach) of the CRSMP- approximately 6.6 miles of pipeline.	SR 34 (Somis Road) and 118 (Los Angeles Ave), County Wide	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
Puente Power Plant Project	Project sited on approximately 3 acres of the north portion of existing 36-acre Mandalay Generating Station (MGS). Replaces 2 gas-fired steam-generating units at MGS with a new General Electric Frame 7HA.01 single-fuel combustion turbine generator and associated auxiliaries. Developed on previously disturbed vacant brownfield land.	393 North Harbor Blvd, Oxnard	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.
PL15-0139 Stion Solar Facility	Requests a CUP to authorize installation and operation of a 3.0 megawatt (MW) alternating current 4.3 MW direct current photovoltaic utility-scale solar renewable energy production facility on approximately 25 acres. Installation of solar panel arrays on ground mounted racks covering a majority of site while maintaining on-site circulation. Water provided by existing water	67 East Telegraph Road, Fillmore	Construction of this facility will result in ground disturbance and could potentially affect buried archaeological resources.

Cultural Resources Table A7
Summary of Cumulative Projects—Archaeological Resources

Project	Description	Location	Impacts/Potential Impact
	well with emergency reservoir tank of 5,000 gallons for firefighting purposes. Other than ancillary storage structures, no habitable buildings proposed. No additional grading or drainage improvements. No native vegetation disturbed by project.		

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Cultural Figures to be Docketed at a Later Date

ENVIRONMENTAL JUSTICE

Lisa Worrall and Mike Monasmith[1]

SUMMARY OF CONCLUSIONS

Until air quality impacts have been fully mitigated, Energy Commission staff concludes that construction and operation of the Mission Rock Energy Center (Mission Rock or project) may cause significant direct, indirect, or cumulative environmental justice impacts (see technical sections). These project impacts may also disproportionately affect the environmental justice population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3**. Therefore, the project impacts associated with air quality on the environmental justice population and whether the impacts are disproportionate are **indeterminate**.

INTRODUCTION

Staff's environmental justice impact analysis evaluates the project's direct, indirect, and cumulative impacts on the environmental justice population living within a six-mile radius of the project site, and whether any impacts would disproportionately affect the environmental justice (EJ) population. Staff uses a six-mile radius around the proposed site, based on the parameters for dispersion modeling used in staff's air quality analysis, to obtain data to gain a better understanding of the demographic makeup of the communities potentially impacted by the project.

WHAT IS ENVIRONMENTAL JUSTICE?

The U.S. Environmental Protection Agency (EPA) defines environmental justice as, "the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies (US EPA 2015, pg. 4)."

The "Outreach" subsection discusses the Energy Commission's outreach program specifically as it relates to the proposed project. The "Environmental Justice Screening" subsection describes the methodology used to identify an EJ population. The "Project-Specific Demographic Screening" subsection presents the demographic data for those people living in a six-mile radius of the project site and a determination on presence or absence of an EJ population. When an EJ population is identified, staff in 12 technical areas[2] considers the project's impacts on this population and whether any impacts would disproportionately affect the EJ population.

[1] Refer to the end of this section for a list of staff who contributed to the Environmental Justice analysis.
[2] The 12 technical areas are Air Quality, Cultural Resources, Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management. Cultural Resources staff considers impacts to Native American populations.

ENVIRONMENTAL JUSTICE IN THE ENERGY COMMISSION SITING PROCESS

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

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

An EJ analysis is composed of the following:

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

California law defines EJ as “the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies” (Gov. Code § 65040.12; Pub. Resources Code, §§ 71110-71118). All departments, boards, commissions, conservancies and special programs of the Resources Agency must consider EJ in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require EJ consideration may include:

- adopting regulations;
- enforcing environmental laws or regulations;
- making discretionary decisions or taking actions that affect the environment;

- providing funding for activities affecting the environment; and
- interacting with the public on environmental issues.

ENVIRONMENTAL JUSTICE SCREENING

SCREENING STEPS

Demographic Data - Identifying an EJ population

Staff uses demographic data to identify presence or absence of an EJ population within a six-mile radius of a project. Staff's demographic screening is based on information contained in two documents: *Guidance on Considering Environmental Justice During the Development of Regulatory Actions* (US EPA 2015) and *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (US EPA 2016). The intention is to identify minority, low income, and indigenous populations potentially affected by the proposed project.[3, 4] Due to a change in surveys generated by the US Census Bureau, the screening process used by Energy Commission staff continues to rely on the most recent (2010) decennial census data to determine the number of minority populations and now relies on the most recent (2011-2015) American Community Survey (ACS) census data to evaluate the presence of low income populations. The subsection "Demographic Data Background - Using the US Census Bureau's Decennial Census and American Community Survey in Staff Assessments" discusses the change in surveys in more detail.

While ACS provides more recently updated data than the 2010 decennial census, staff continues to use the current decennial data as it provides a more accurate reflection of where minority populations reside. Data at this small scale highlights where concentrations of minority populations reside so that the 12 technical staff can analyze whether any project impacts may be experienced by an EJ population. Updated minority data from the most recent ACS is presented for the smallest statistical area that yields reliable results so that readers can see how demographics, specifically minority concentrations, have changed since the decennial 100 percent survey.

Minority Populations and Indigenous Peoples

According to the United States Environmental Protection Agency's (US EPA) *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*, minority individuals are defined as members of the following groups:

- American Indian or Alaskan Native
- Asian or Pacific Islander

[3] For the purposes of EPA's policy on *Environmental Justice for Working with Federally Recognized Tribes and Indigenous Peoples*, the EPA defines indigenous peoples as including state-recognized tribes; indigenous and tribal community-based organizations; individual members of federally recognized tribes, including those living on a different reservation or living outside Indian country; individual members of state-recognized tribes; Native Hawaiians; Native Pacific Islanders; and individual Native Americans.
[4] Executive Order 12898 notes that "populations with differential patterns of subsistence consumption of fish and wildlife" as populations of concern. This population category largely overlaps with those defined on the basis of income and race and ethnicity so would be represented in the data.

- Black, not of Hispanic origin
- Hispanic

Staff identifies an EJ population based on race/ethnicity when one or more U.S. Census blocks in the six-mile radius have a minority population greater than or equal to 50 percent.

Low Income Populations

The White House's Office of Management and Budget (OMB) has designated the US Census Bureau's annual poverty measure as the official metric for program planning and analysis by all Executive branch federal agencies, but does not preclude the use of other measures (US EPA, 2015). However, the Census Bureau does not provide an official definition of low income. The US EPA's *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* notes that analysts may characterize low-income populations more broadly than just those living below the poverty threshold. There are times when projects are proposed in areas where the census poverty data is not reliable. This generally occurs when projects are proposed in less densely-populated areas which correlate with the sample size of the Census data. When a sample size is not large enough, the results are not reliable. In these cases, staff uses other data sources to represent low income populations, such as the California Department of Education enrollment in free/reduced-price meal program.

The official poverty thresholds do not vary by geography (e.g. state, county, etc.), but are updated annually to allow for changes in the cost of living. The census poverty data staff generally uses to identify low-income populations does not include institutionalized people, people in military quarters, people in college dormitories, and unrelated individuals under 15 years old.

A 50 percent threshold determines whether minority populations are considered EJ populations, but as explained above, there is not a similar threshold for low-income populations (US EPA 2016). In the absence of thresholds, staff compares data in the six-mile radius with other appropriate reference geographies (statistical areas), such as Census County Divisions (CCDs), the county, or the state, to determine whether the data indicates less than, more than, or about the same number of low income people are within the six-mile radius as those in the comparison geographies. The 1998 U.S. EPA guidance, *Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses*, notes that a demographic comparison to the next larger geographic area or political jurisdiction should be presented to place population characteristics in context (US EPA 1998, pg. 12). This is consistent with staff's approach to identify low income populations that constitute an EJ population based on low income.

Demographic Data Background - Using the US Census Bureau's Decennial Census and American Community Survey in Staff Assessments

After the 2000 decennial Census, the detailed social, economic, and housing information previously collected on the decennial census long form became the American Community Survey (ACS) (US Census 2013a). The U.S. Census Bureau's

ACS is a nationwide, continuous survey that will continue to collect long-form-type information throughout the decade. Decennial census data is a 100 percent count collected once every ten years and represents information from a single reference point (April 1st). The main function of the decennial census is to provide counts of people for the purpose of congressional apportionment and legislative redistricting.

ACS collects data from a sample of the population based on information compiled continually and aggregated into one- and five-year estimates ("period estimates") released every year. The primary purpose of the ACS is to measure the changing social and economic characteristics of the U.S. population. As a result, the ACS does not provide official population counts in between censuses.

ACS collects data for every statistical area level from the largest level (nation) to the smallest level available (block group (BG)).[5] Census Bureau staff recommends the use of data no lower than the census tract level.[6,7] ACS one-year estimates cannot reliably capture data from lower geographical areas, as the population size does not allow for an adequate sample size. The aggregated five-year estimates provide sufficient sample size to yield reliable data in less densely populated statistical areas. Thus, Energy Commission staff uses data from the five-year estimates in the analysis to better represent a wider range of populated areas. A certain level of variability is associated with the estimates because they come from a sample population. This variability is expressed as a margin of error (MOE) which is used to calculate the coefficient of variation (CV). CVs are a standardized indicator of the reliability of an estimate. While not a set rule, the US Census Bureau considers the use of estimates with a CV more than 15 percent a cause for caution when interpreting patterns in the data (US Census 2009). When CVs for estimates are high, the reliability of an estimate improves by using estimates for a higher statistical area (e.g. city or community versus census tract) or combining estimates across statistical areas.

CalEnviroScreen - More information about an EJ Population

California Communities Environmental Health Screening Tool: CalEnviroScreen Version 3.0 (CalEnviroScreen) is a science-based mapping tool used by the California EPA to

[5] Block Group - A statistical subdivision of a census tract. A BG consists of all tabulation blocks whose numbers begin with the same digit in a census tract; for example, for Census 2000, BG 3 within a census tract includes all blocks numbered between 3000 and 3999. The block group is the lowest-level geographic entity for which the Census Bureau tabulates sample data from the decennial census. **Source:** http://www.census.gov/dmd/www/glossary.html.

[6] Census Tract - A small, relatively permanent statistical subdivision of a county or statistically equivalent entity, delineated for data presentation purposes by a local group of census data users or the geographic staff of a regional census center in accordance with Census Bureau guidelines. Census tracts are designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time they are established. Census tracts generally contain between 1,000 and 8,000 people, with an optimum size of 4,000 people. Census tract boundaries are delineated with the intention of being stable over many decades, so they generally follow relatively permanent visible features. **Source:** http://www.census.gov/dmd/www/glossary.html.

[7] 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.

identify disadvantaged communities[8] pursuant to Senate Bill 535. As required by SB 535, disadvantaged communities are identified based on geographic, socioeconomic, public health and environmental hazard criteria. CalEnviroScreen identifies communities most burdened by pollution from multiple sources and most vulnerable to its effects, taking into account socioeconomic and health status of people living in those communities (CalEPA 2016, pg. 1). CalEnviroScreen 3.0 uses the census tract statistical area as the unit of analysis (CalEPA 2016a, pg. 7).

The CalEnviroScreen score derived for a given tract relative to other tracts in the state (CalEPA 2016, pg. 6). Values for the various components are shown as percentiles, which indicate the percent of all census tracts with a lower score. A higher percentile indicates a higher potential relative burden. CalEnviroScreen scores are calculated by multiplying the pollution burden and population characteristics categories together into a single unified score (Pollution Burden X Population Characteristics = CalEnviroScreen Score) (CalEPA 2016). Each group has a maximum score of 10, thus the maximum CalEnviroScreen score is 100. **Environmental Justice Table 1** lists the indicators that go into the pollution burden score and the population characteristics score to form the unified CalEnviroScreen score. These indicators are used to measure factors that affect the potential for pollution impacts in communities.

[8] The California Environmental Protection Agency (CalEPA), for purposes of its Cap-and-Trade Program, has designated "disadvantaged communities" as census tracts having a CalEnviroScreen score at the top 25 percent (75th percentile) (CalEPA 2017).

Environmental Justice Table 1
Components that form the CalEnviroScreen 3.0 Score

Pollution Burden	
Exposure Indicators	Environmental Effects Indicators
Ozone concentrations	Cleanup sites
Particulate Matter (PM) 2.5 concentrations	Groundwater threats
Diesel PM emissions	Hazardous waste
Drinking water contaminants	Impaired water bodies
Pesticide Use	Solid waste sites and facilities
Toxic releases from facilities	
Traffic density	
Population Characteristics	
Sensitive Populations Indicators	Socioeconomic Factors Indicators
Cardiovascular disease (emergency department visits for heart attacks)	Educational attainment
Low birth-weight infants	Linguistic isolation
Asthma emergency department visits	Poverty
	Rent-adjusted income
	Unemployment

There are several limitations with CalEnviroScreen that are important to note (OEHHA 2017, pg. iii, 1-3, 6, 12). Some limitations and items to note on CalEnviroScreen include the following:

- The core purpose of this tool is to characterize "impacts" of pollution in communities with respect to factors that are not routinely included in risk assessments, where "impacts," for the purposes of this tool, refers broadly to stressors that can affect health and quality of life.
- The tool is a screening tool developed to conduct statewide evaluations of community-scale impacts.
- Many factors, or stressors, contribute to a community's pollution burden and vulnerability.
- Integration of multiple stressors into a risk assessment is currently not feasible.
- The score provides a relative rather than absolute measure of pollution's impacts and vulnerabilities in California communities.
- The score provides a broad picture of the burdens and vulnerabilities that communities confront from environmental pollutants.
- A percentile does not describe the magnitude of the difference between two tracts, rather it simply tells the percentage of tracts with lower values for that indicator.
- The score is for a given tract relative to other tracts in the state.

The tool did not/does not:

- substitute for a cumulative impact analysis under the California Environmental Quality Act (CEQA).
- restrict the authority of government agencies in permit and land use decisions.
- guide all public policy decisions.
- inform the implementation of many policies, programs and activities throughout the state.

Based on CalEnviroScreen data and other data specific to the project area, staff considers where project impacts would potentially occur and the extent to which that area of potential project impact is currently burdened. With this combined information, staff then assesses the extent of the project's impact on the EJ population. Because a CalEnviroScreen score evaluates multiple pollutants and factors collectively, staff examined individual contributions of indicators that are relevant to their technical area. Not all of the technical areas that consider project impacts to an EJ population have relevant CalEnviroScreen indicators to their technical area.

Part of staff's assessment of how, or if, the project would impact an EJ population includes a review of CalEnviroScreen data for the project area. There are five technical areas that could have project impacts that could combine with the indicators in CalEnviroScreen: Air Quality, Public Health, Soil and Water Resources, Traffic and Transportation, and Waste Management. When staff members in these technical areas have identified a potential impact where an EJ population is present, they use CalEnviroScreen to better understand the characteristics of the areas where the impact would occur and ensure that disadvantaged communities in the vicinity of the proposed project have not been missed when screened by race/ ethnicity and low income.

OUTREACH

As a part of the U.S. EPA's definition of environmental justice, meaningful involvement is an important part of the siting process. Meaningful involvement occurs when:

- those whose environment and/or health would be potentially affected by the decision on the proposed activity have an appropriate opportunity to participate in the decision;
- the population's contribution can influence the decision;
- the concerns of all participants involved are considered in the decision-making process; and,
- involvement of the population potentially affected by the decision on proposed activity is sought. (US EPA 2016).

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

LIBRARIES

On February 16, 2016, Energy Commission staff sent the Mission Rock Application for Certification (AFC) to local libraries close to the proposed project site, including the Blanchard Community Library in the city of Santa Paula and the Saticoy Library in the Ventura suburb of Saticoy. The Preliminary Staff Assessment (PSA) will be sent to the same libraries.

INITIAL OUTREACH EFFORTS

Energy Commission staff and the PAO coordinated closely on public outreach early in the review process. A Notice of Receipt of the Mission Rock AFC and Notice of Public Participation were docketed and mailed to the project mail list on February 11, 2016. Public notices for the project in both English and Spanish were published in local newspapers on June 28, 2016 and July 28, 2016. The PAO made a presentation outlining the Energy Commission's review process and avenues for public participation in English and Spanish during the June 28 and July 28, 2016 Informational Hearing and Environmental Scoping Meeting held by the Committee overseeing the Mission Rock AFC proceeding.

In accordance with the Governor's Executive Order B-10-11, the Energy Commission's Tribal Consultation Policy, the Energy Commission's Siting Regulations, and recent amendments to CEQA (i.e., AB 52), the Energy Commission Tribal Liaison contacted California Native American tribes, as defined in CEQA. This ongoing consultation effort includes contacting groups via hard-copy letters, emails, and follow-up phone calls, inviting them to comment on the proposed Mission Rock project and offering to hold face-to-face meetings regarding the project. Additional information regarding the specific groups contacted can be found in **Cultural Resources Table 2** in the **Cultural Resources** section of this staff assessment.

The PAO contacted local elected officials, Native American tribal groups, and interested parties such as the Audubon Society and Sierra Club. The PAO also published notices in English and Spanish in the local newspapers prior to the June 28, 2016 Site Visit, Informational Hearing, and Environmental Scoping Meeting and continuation of the Informational Hearing and Environmental Scoping Meeting on July 28, 2016. Notices were published in Vida, the local Spanish-language newspaper, published in English and Spanish in the Ventura Star, and published in English in the Santa Paula Times. Spanish-language interpreters facilitated public comment at the second informational hearing.

Energy Commission regulations require staff to notice, at a minimum, property owners within 1,000 feet of a project and 500 feet of a linear facility (such as transmission lines, gas lines, and water lines). This was done for the project, and the property owners list has been augmented to include the surrounding political jurisdictions, school districts, state and federal agencies, and interest groups.

The **Executive Summary** and **Environmental Justice** sections of the PSA will be translated into Spanish. Also a PSA Summary presenting a condensed synopsis of staff's PSA will be translated into Spanish for distribution at the PSA Workshop and docketed before the workshop. Energy Commission staff will hold a public workshop for

the PSA in Santa Paula. Headsets with simultaneous Spanish translation will be available for the workshop.

PROJECT-SPECIFIC DEMOGRAPHIC SCREENING

Mission Rock would be located west of the city of Santa Paula in unincorporated Ventura County at 1025 Mission Rock Road, a property used for recreational vehicle and boat storage. Proposed linear infrastructure includes natural gas pipeline, recycled water pipeline, and transmission generation tie line.

Minority and Indigenous Populations

Environmental Justice Figure 1 (using a one-, three-, and six-mile radius) shows that the population in these census blocks represents an EJ population based on race and ethnicity (minority population) as defined by *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (US EPA 2016). The population in the six-mile radius lives primarily within the city of Santa Paula and the communities of El Rio and Saticoy. There is also a population living in the Ventura County Todd Road Jail Facility. They would be included in the population count based on race and ethnicity. The potential impact areas around the proposed linears, such as the transmission line, are wholly within the six-mile radius around the project site.

In an effort to update population data since the 2010 decennial U.S. Census, staff has included **Environmental Justice Table 2** to provide the reader a comparison of decennial and ACS data for minority populations. As shown in the table below, the percent of minority populations in the city of Santa Paula and Camarillo, Santa Paula, and Ventura CCDs have remained consistent since 2010.

Environmental Justice Table 2
Minority Population Data Within the Project Area

GEOGRAPHIC AREAS IN A SIX-MILE RADIUS		Total Population	Not Hispanic or Latino: White alone	Minority	Percent Minority (%)
El Rio [+]	April 1, 2010 Census [1]	7,198	816	6,382	88.66
Saticoy [+]	April 1, 2010 Census [1]	1,029	106	923	89.70
Santa Paula	April 1, 2010 Census [1]	29,321	5,434	23,887	81.47
	2011-2015 Estimate [2]	30,246 ±36	5,704 ±784	24,542 ±785	81.14 ±2.59
Camarillo CCD	April 1, 2010 Census [1]	66,953	41,247	25,706	38.39
	2011-2015 Estimate [2]	69,621 ±771	41,081 ±1,060	28,540 ±1,311	40.99 ±1.83
Santa Paula CCD	April 1, 2010 Census	32,060	6,511	25,549	79.69
	2011-2015 Estimate [2]	33,482 ±531	6,646 ±806	26,836 ±965	80.15 ±2.59
Ventura CCD	April 1, 2010 Census	111,889	66,462	45,427	40.60
	2011-2015 Estimate [2]	114,065 ±480	65,184 ±1,353	48,881 ±1,436	42.85 ±1.25

Notes: Staff's analysis of the 2011 – 2015 estimates returned CV values less than 15, indicating the data is reliable. [+] Updated minority data for these communities returned CV values greater than 15 and thus are not reported based on their level of reliability. **Sources:** [1] US Census 2010a and [2] US Census 2016a.

Low Income Populations

Staff identified low income populations in the project area using a combination of data. Due to the sample size for some of the project impact area (affecting data reliability), staff supplemented the ACS poverty data with the most current data from the California Department of Education to evaluate the percent of school children enrolled in the free/reduced price meal program by school district.

Census County Division level data (CCD) from the ACS Five-Year Estimates was used with data from the California Department of Education (CDE), specifically the percent of students enrolled in a school meal program and receiving free or reduced price meals (US Census 2015b) [9]. Because of the unreliability of the ACS poverty estimates for some of the area in the project's six-mile radius, staff used school meal program enrollment data to determine what areas had a relatively larger percent of population more likely to be considered a low income population. With the combination of data sources, staff was better able to identify in what areas within the project's six-mile radius a low income population lives and thus determine whether there are areas considered to have an EJ population based on a low income population. **Environmental Justice Figure 2** presents the boundaries of the statistical areas associated with the low income data and the statistical areas determined to have an EJ population based on a low

9 Staff determined that data at the Census County Division (CCD) level is the lowest level available for ACS data that retains reasonable accuracy. The data represents a period estimate, meaning the numbers represent an area's characteristics for the specified time period.

income population, as shown as shaded areas. **Environmental Justice Table 3** shows low income data within a six-mile radius of the project site. Staff used the combination of US ACS data and CDE data to represent the population in the project's six-mile radius. Using both data sets, staff compared the data to a larger reference statistical area, consistent with US EPA guidance.

It should be noted that those residing in Ventura County Todd Road Jail Facility are not included in ACS census data on poverty. See the previous discussion in the subsection, "Demographic Data- Identifying an EJ Population" for more information.

Environmental Justice Table 3
Poverty and Low Income Data within the Project Area

GEOGRAPHIES IN SIX-MILE RADIUS	Total	Income in the past 12 months below poverty level	Percent below poverty level (%)
	Estimate*	Estimate	Estimate
Camarillo CCD	67,415 ±664	4,398 ±887	6.50 ±1.3
Santa Paula CCD	32,889 ±509	6,315 ±911	19.20 ±2.7
Ventura CCD	112,545 ±531	13,435 ±1,319	11.90 ±1.2
REFERENCE GEOGRAPHY			
Ventura County	829,904 ±849	91,880 ±3,133	11.10 ±0.4
SCHOOL DISTRICTS IN SIX-MILE RADIUS**	Enrollment Used for Meals	Free or Reduced Price Meals	
Mesa Union Elementary School District	1,276	401	31.4%
Rio Elementary School District	5,142	3,968	77.2%
Somis Union School District	259	152	58.7%
REFERENCE GEOGRAPHY			
Ventura County	139,118	71,455	51.4%

Notes: * Population for whom poverty status is determined. Staff's analysis of the 2010 – 2014 estimates returned CV values less than 15, indicating the data is reliable. **Sources**: CDE 2017 and US Census 2016b.

Based on the percent of population living below the federal poverty level in the statistical areas in a six-mile radius of the Mission Rock site, Santa Paula CCD has a higher percent of below-poverty-level population when compared with the reference statistical area, Ventura County. Based on the number of students enrolled in the free or reduced priced meal program in school districts in a six-mile radius of the Mission Rock site, a higher percent of students in the Rio Elementary School District and Somis Union School District are enrolled in the free or reduced price meal program compared with the reference geography, Ventura County.

Staff concludes that the below-poverty-level population in Santa Paula CCD and populations enrolled in the free or reduced price meal program in the Rio Elementary School District and Somis Union School District constitute EJ populations based on a low income population as defined by *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (US EPA 2016).

Agricultural Workers in the Project Area

The demographic setting in the project area includes residents and agricultural workers in the fields in the project area. Demographic information about the residents was obtained from the US Census and the CDE. Staff used the US Census Bureau's OnTheMap tool to find demographic information about the number of agricultural jobs/farm workers in the project area (within a six-mile and one-mile radius of the Mission Rock site) (US Census 2014). The OnTheMap tool maps, charts, and reports on the demographic data characteristics and commute patterns of workers/jobs. The OnTheMap tool uses 2010 census blocks and employment data from Unemployment Insurance Wage Records, information on employees and jobs for most federal employees from the Office of Personnel Management, information on firm structure and establishment location from the Quarterly Census for Employment and Wages, and age, earnings, and industry profiles compiled by the Census Bureau from state's records and supplemented with other Census Bureau source data.

There are approximately 51 agricultural jobs/farm workers within a one mile radius of the project site concentrated north of the project site. There are approximately 4,398 agricultural jobs/farm workers within a six-mile radius of the project site concentrated primarily northeast and south of the project site. In comparison there are 25,877 agricultural jobs/farm workers in the Ventura County.

PROJECT-SPECIFIC CALENVIROSCREEN RESULTS

Environmental Justice Figure 1 presents the minority data at the census block geographic level and marks the census tract boundaries of the tracts identified in CalEnviroScreen 3.0 as disadvantaged communities. CalEPA identifies disadvantaged communities as the 25 percent (75 to 100 percentile) highest scoring census tracts in California (CalEPA 2017). As the figure shows, there are no disadvantaged community census tracts in a six-mile radius of the project site.

PROJECT IMPACTS TO THE ENVIRONMENTAL JUSTICE POPULATION

When staff from the 12 technical areas identified impacts from the project that could affect people; staff reviewed **Environmental Justice Figure 1**, **Figure 2,** and **Table 3** and considered how the project could affect the EJ population and nearby farm workers. The following is a summary of the conclusions on project impacts to the EJ population from each of the 12 technical areas. For more information refer to the subject technical area section of this staff assessment.

AIR QUALITY

In carrying out this analysis, staff evaluated whether Mission Rock is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards and whether mitigation measures proposed for Mission Rock would be adequate to lessen the potential impacts to a level of insignificance.

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, regardless of income status or race (including EJ populations and farm workers). 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.

The applicant has not yet fully identified mitigation for Mission Rock's potential air quality impacts. Full implementation of the recommended air quality conditions of certification would generally result in mitigation to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level, including impacts to the EJ population and farm workers within the six-mile radius of the project site. However, these conditions have not yet been completed as the applicant has not yet identified specific mitigation. Assuming adequate mitigation would be implemented, air quality impacts to the EJ population and farm workers would be less than significant. Nonetheless, until the air quality impacts are fully mitigated, the project's air quality impacts on the EJ population and whether the impacts would be disproportionate cannot be determined.

CULTURAL RESOURCES

Staff has considered environmental justice populations in its analysis of Mission Rock. Because staff has not made a conclusive identification and analysis of the potential ethnographic resources, staff cannot conclude at this time if Native Americans would be considered an EJ population that could be impacted by the proposed project. Staff anticipates being able to conclude in the Final Staff Assessment if Native Americans would be considered an EJ population that could be impacted by the proposed project.

HAZARDOUS MATERIALS MANAGEMENT

The two potential incidents that could affect the EJ population would be a worst case release from the aqueous ammonia storage tank and the transportation of hazardous materials by vehicle from State Route (SR)-126 to the project site. Although a highly unlikely event, the worst case release would not significantly impact the farm workers or any off-site receptors with implementation of mitigation measures proposed by the applicant and by staff in proposed Conditions of Certification **HAZ-3, 4, 5, 6** and **11**. These conditions would mitigate the risk to less than significant for any population, including the most sensitive population such as an EJ population, and impacts would not be disproportionate on the EJ population. Furthermore, it is important to note that any exposure to a hazardous material proposed for use at this power plant due to an accidental release would be short-term (termed "acute") and involve chemicals (such as ammonia) that would not remain in a person's body.

Trucks delivering hazardous materials would be travelling through EJ communities on SR-126. While an accident could potentially occur involving either an aqueous ammonia or other hazardous material delivery truck, an accidental release of the hazardous materials cargo would still be unlikely. The proposed Conditions of Certification **HAZ-5** and **HAZ-6** combined with the hazardous materials risk analysis (see the **Hazardous Materials Management** section in this staff assessment) along with emergency

response measures discussed in the **Worker Safety and Fire Protection** section of this staff assessment, all combine to demonstrate that the risk of impact resulting from hazardous materials transportation to the project site is less than significant to any population, including the most sensitive population such as an EJ population, and thus would not have a disproportionate impact.

LAND USE

A disproportionate land use impact on an EJ population could occur if a project would physically divide the established community of an EJ population or if a project in proximity to an EJ population conflicts with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental impacts on a population. The primary purpose of planning is to protect the public health, safety, and welfare. Incompatible land uses may create health, safety, and welfare issues for the community. There are EJ populations nearby the Mission Rock site adjacent to and nearby the transmission line, but not in close proximity. The closest residence in an EJ area is approximately one mile east of the power plant. The residence is in an industrial zoned area. Staff concludes the project would not divide an existing community, as the project is proposed on land zoned as industrial within an industrial zoned area; however, staff could not determine whether the project would conflict with applicable land use plans, policies, or regulations, until air quality impacts are fully mitigated.

Staff in the technical areas of Noise and Vibration, Public Health, and Soil and Water Resources concludes that the project would not pose significant individual or cumulative hazard to health and human safety with the incorporation of recommended conditions of certification. However, as air quality impacts are not fully mitigated, siting the project where it is proposed could create a land use incompatibility and could disproportionately affect the EJ population. Once air quality impacts are fully mitigated, land use impacts from the project on the EJ population would likely be less than significant. Land use impacts on the EJ population and whether the impact would be disproportionate are **indeterminate**.

NOISE AND VIBRATION

Staff has prepared Conditions of Certification **NOISE-1** through **NOISE-7** to ensure noise impacts are reduced to less than significant for all the area's population, including the EJ population.

There are also approximately 51 agricultural jobs/farm workers within a one-mile radius of the project site. Restrictions on Mission Rock's construction and operation activities, described in Conditions of Certification **NOISE-6** and **NOISE-7**, would reduce the noise impact from Mission Rock to the nearby farm workers to a less than significant level. In addition, Condition of Certification **NOISE-1** requires the project owner to notify the nearby farm workers' employer of the start of construction. With the inclusion of **NOISE-1**, **NOISE-6, NOISE-7**, and other noise conditions of certification, impacts to the EJ population would not be disproportionate because noise generated by the project would not cause displacement of people from where they live or work.

PUBLIC HEALTH

As discussed in staff's Public Health testimony, the pollutants of specific focus in staff's analysis are the toxic air emissions which have no specific air quality standards. These pollutants are further classified as carcinogenic (capable of causing cancer) or non-carcinogenic (or capable of effects other than cancer). According to present knowledge, there is a specific cancer risk from every exposure to any given carcinogen, establishing cancer as the most sensitive endpoint in assessing the environmental acceptability of any source of both carcinogenic and non-carcinogenic pollutants. It is this sensitivity that has elevated the importance of the numerical cancer risk estimates in the health risk assessment process. The lower sensitivity of non-cancer effects stems from the fact that such effects would occur only from exposure above their respective effects thresholds. The risk of such non-cancer effects is obtained by comparing exposure estimates with the established effects level or the applicable air quality standard.

Staff found from its numerical risk assessment that (a) the toxic emissions from the proposed Mission Rock project would not significantly impact public health anywhere in in the project area during the construction, demolition, and operational phases and that (b) there would be no disproportionate impacts on the area's EJ population as identified in **Environmental Justice Figure 1, Figure 2, and Table 3.** The focus on EJ population impacts stems from the finding that such populations are sometimes exposed to environmental pollutants at much higher levels than the population in general. Since the Mission Rock-related emissions would be below the levels of health significance, staff does not regard the project as posing a significant health hazard to the general public or the area's EJ population or other distinct groups (such as on-site and off-site farm and nonfarm workers, and recreational users) from the toxic pollutants of specific concern in this health analysis.

Another risk of potential concern for area residents is the risk of valley fever from the fungus, Coccidioidomycosis. As discussed in the **Public Health** section of this assessment, the disease results from inhalation of dust from disturbed soil as might happen with construction workers, farmers, farmworkers, and the general public. Prevention is normally from the specific dust control measures described in the **Air Quality** section and specified as Conditions of Certification **AQ-SC3** and **AQ-SC4**. Staff would not expect any significant valley fever risk after implementing these conditions of certification.

SOCIOECONOMICS

The potential for socioeconomic impacts is predominantly driven by the temporary influx of non-local workers seeking lodging closer to a project site. For Mission Rock, the few construction workers seeking lodging in the project area during construction would have a negligible reduction of the housing supply. As the new operations workers are anticipated to come from Ventura County, few, if any new operations workers are estimated to move closer to the project area. Thus, workers associated with Mission Rock would not affect existing residents (including any agricultural workers living in the project area) that may be seeking new houses in which to reside.

A socioeconomic impact that could disproportionately affect a minority or low income population is if the project were to displace residents from where they live, causing them

to find housing elsewhere. If this occurs, an EJ population may have a more difficult time finding replacement housing due to racial biases and possible financial constraints. As Mission Rock would not displace any residents or remove any housing, there would be no disproportionate impact to EJ populations from this project.

SOIL AND WATER RESOURCES

Staff found the proposed project would not cause impacts to groundwater quality or potable water supplies, and impacts on surface water quality would be mitigated to less than significant. With respect to flood risks, staff's preliminary evaluation suggests that present-day flood risks are low and future flood risks could be between low and moderate. Staff compares risks and impacts on the EJ populations with respect to the risks and impacts on the overall population within the vicinity of the project area.

Impacts on Water Quality

Mission Rock would mitigate potential impacts to less than significant by implementing conditions of certification which would ensure that Los Angeles Regional Water Quality Control Board's minimum water quality standards are met. Staff evaluated potential water quality impacts of Mission Rock's wastewater discharges on EJ communities, assuming compliance with all applicable laws, ordinances, regulations, and standards (LORS), and conditions of certification. Mitigation measures could potentially be insufficient for EJ communities due to characteristics of the population such as:

- cumulative risks due to exposure from pollution sources in addition to the proposed project;
- unique exposure pathways and scenarios (e.g., subsistence fishers, farming communities); and
- presence of individuals who are physically sensitive or have limited resources (e.g., individuals with poor diets, limited or no access to healthcare).

Santa Clara River Reach 3 is on the Clean Water Act Section 303(d) list as impaired for chloride, total dissolved solids, ammonia, and toxicity. Mission Rock would manage all of its wastewater discharges (industrial process wastewater, storm water runoff, and sanitary waste) to completely avoid or significantly minimize any contribution of these pollutants to the Santa Clara River.

Mission Rock's sanitary waste would perhaps have the greatest potential of discharging a pollutant, because onsite septic systems are recognized as a potentially significant source of nitrogen pollution (in the form of ammonium and nitrate). Condition of Certification **SOIL&WATER-6** would require the applicant to comply with the requirements of Ventura County Building Code - Ordinance 4496 and the California Plumbing Code (Cal. Code Regs., tit. 24, Part 5), which govern the design and operation of septic systems to ensure no deleterious impact to groundwater or surface water.

Because Mission Rock wastewater discharges would not affect potable water supplies nor distinctly contribute to existing levels of chloride, total dissolved solids, ammonia, or

toxicity, the project's mitigated water quality impacts would not disproportionately affect EJ populations.

Flooding Risks

Community flooding, regardless of its cause, can result in structural damage, property loss, exposure to contamination or toxic substances, and impacts to public health and safety. Low-income households are less likely to afford emergency preparedness materials, buy insurance policies, and obtain needed building improvements. Renters are also less likely to reinforce buildings and buy insurance because the decision to make major improvements and financial gains typically lies with the property owner. Emergency response crews may be unable to communicate with non-English speakers. The ability to remain safe or evacuate high-risk areas during a flood event is largely affected by factors such as quality of residential structures, access to transportation, availability of emergency supplies, effective service by emergency responders, and exposure to environmental hazards.

Although multiple factors raise the vulnerability of EJ communities to a flood event and increase the likelihood of disproportionate impacts, the proposed project would not cause these communities to flood nor exacerbate flood impacts during a flood event. For this reason, the proposed project would not individually or cumulatively contribute to disproportionate flooding impacts to EJ populations.

TRAFFIC AND TRANSPORTATION

The project's traffic impacts are predominantly associated with temporary construction traffic influx to the studied roadway segments. Alternative modes of transportation including bus transit, walking, and cycling can often be the only modes of transportation available to EJ communities. An impact to one or more of these modes of transportation could cause a disproportionate impact to a low income community. Mission Rock would have a less than significant impact on bus transit, pedestrian accessibility, and bicycle facilities. With implementation of staff's proposed conditions of certification, the construction and operation of Mission Rock would not have any significant impacts to the surrounding road system and Mission Rock's traffic would not disproportionately affect the EJ population.

TRANSMISSION LINE SAFETY AND NUISANCE

The safety and nuisance impacts from the proposed transmission line could occur as field effects such as audible noise, radio and television signal interference, human electric and magnetic field (EMF) exposure, and non-field effects such as fire and electric shocks. Modern transmission lines are required to be designed, routed, and operated to maintain these impacts below levels of human and environmental health significance. As noted in the **Transmission Line Safety and Nuisance** section of this staff assessment, the applicant's transmission line design and operational plan and staff's recommended conditions of certification would be adequate to reduce these impacts below levels of environmental health significance. Since the proposed transmission line would not be routed near area residences, there would be little potential for the long-term residential field exposure that has been of health concern in the past. This would also be true for both the general population around the project and

the area's EJ population. Short-term field exposure has been established to be of little biological significance, meaning that on-site worker and off-site farm worker exposures would be insignificant. As the transmission line would not be routed near residences and the health impacts would be below significance for both the general public and EJ population, the transmission line would not disproportionately impact an EJ population.

VISUAL RESOURCES

Environmental justice populations may experience disproportionate visual impacts if the siting of visually intrusive or degrading projects, particularly unmitigated industrial facilities, occurs within or near EJ communities to a greater extent than within the community at large. As depicted in **Environmental Justice Figure 1** and **Figure 2**, the project is adjacent to an EJ population at three specific segments of the project. These three segments of the project would fall within the project's foreground viewshed or visual sphere of influence.

The only section of the project with more than a minor impact is thus the second segment where there would be a moderate visual effect on residents. The second segment of the project is adjacent to the proposed transmission line right-of-way between State Route (SR) 126 and Telegraph Road. A small number of nearby residences and farm workers' housing exist within ¼-mile of the transmission line. The moderate visual effect of a view of one monopole by residents of three farm workers' homes south of Telegraph Road would be the only potential EJ impact - a moderate and less-than-significant effect. This impact on the EJ population would not be disproportionate, but rather quite small compared to the much higher level of visual exposure to the power plant and transmission line by thousands of motorists from the population at large on SR 126.

WASTE MANAGEMENT

The waste management impacts of specific focus for EJ populations and farm workers within the six-mile radius of the project site are those from on-site handling of the wastes. To assess the potential for the EJ impacts of specific concern for this project, staff focused on the following aspects of the past and proposed waste management practices at the site: past clean-ups, status as a waste generating facility, and the project's proposed handling of nonhazardous solid waste, and a listing of the waste disposal facilities that could be utilized for the project.

There have been no discernible signs of new or old contamination at the site. In addition, staff has recommended specific conditions of certification requiring cleanup of contaminated soils if encountered during demolition, clearance and construction activities.

Mission Rock would be categorized as a licensed hazardous waste generator and would thus be required to comply with LORS that would ensure safe handling, storage, transportation, and disposal (management) of hazardous wastes. Staff has included conditions of certification requiring development and implementation of plans that would ensure proper disposal of hazardous waste at appropriately licensed facilities.

Solid waste from demolition, clearance, and construction would be segregated, where practical for recycling, and disposed of in a facility with adequate capacity for disposal of nonhazardous wastes. Staff has included specific conditions of certification requiring development and implementation of plans for proper disposal of nonhazardous waste at appropriately licensed facilities. The project owner would use solid wastes sites or facilities verified to be in compliance with current LORS. In addition, there would be no significant increase of nonhazardous waste stream to the proposed waste disposal facility from Mission Rock-related demolition, construction, or operations activities given the adequacy of disposal spaces.

Staff concludes that management of the waste generated during demolition, site clearance, construction and operation of the Mission Rock project would not result in any significant adverse impacts on the general public or EJ population within the six-mile radius of the site. Additionally, impacts on the EJ population from the management of waste generated by the project would not be disproportionate because the project would contribute an insignificant incremental amount of waste and the handling of on-site waste would be subject to LORS and proposed conditions of certification.

STAFF CONTRIBUTORS TO THE ENVIRONMENTAL JUSTICE ANALYSIS

The following staff are responsible for specific topics and technical analyses in the **Environmental Justice** section of this staff assessment. Staff names are listed with their area of technical expertise.

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Technical Area	**Staff**
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Cultural Resources	Matt Braun
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Land Use	Lisa Worrall
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Transmission Line Safety and Nuisance	Obed Odoemelam, PhD.
Visual Resources	William Kanemoto
Waste Management	Obed Odoemelam, P.hD.

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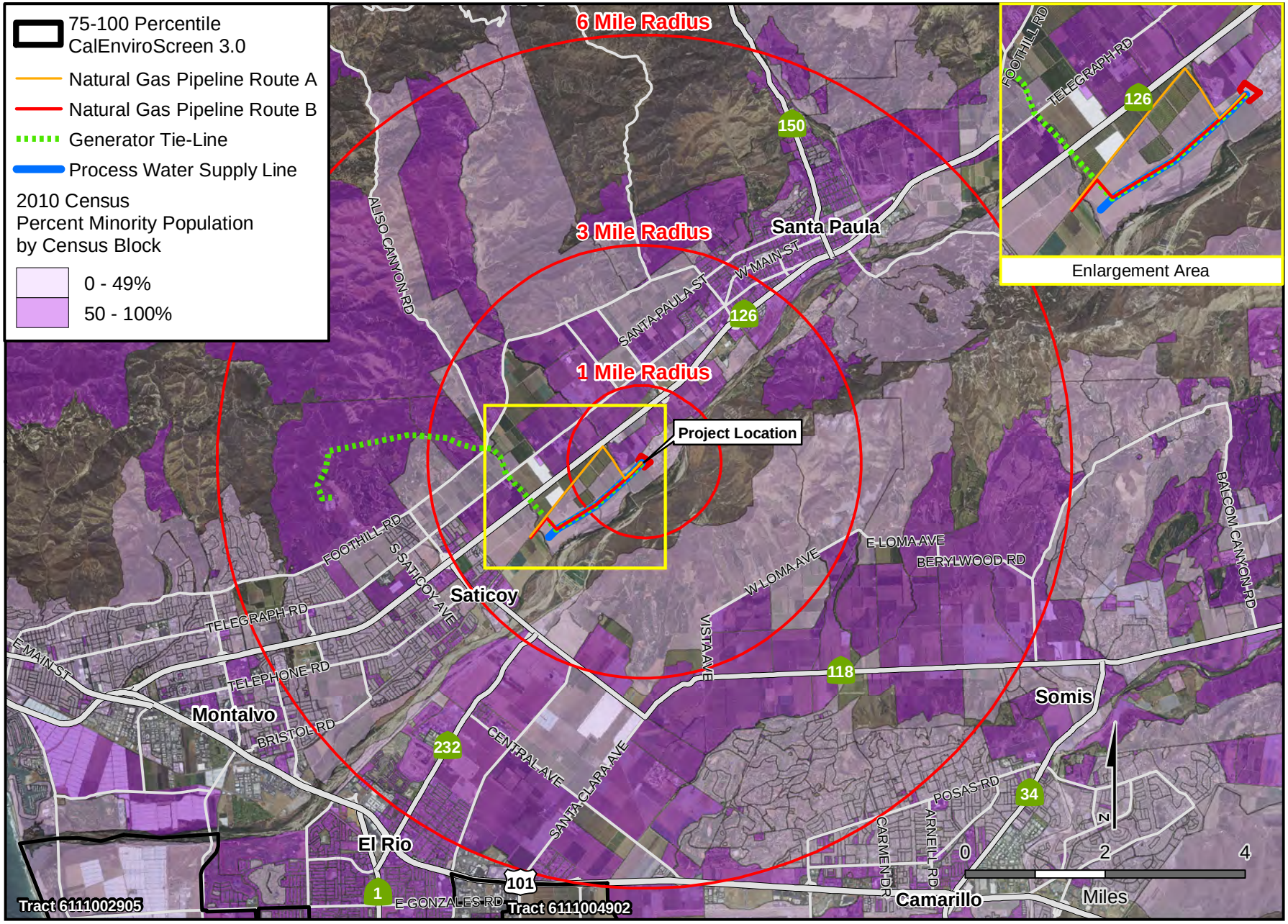
ENVIRONMENTAL JUSTICE - FIGURE 1

Mission Rock Energy Center - Census 2010 Minority Population by Census Block with CalEnviroScreen Disadvantaged Communities by CensusTracts



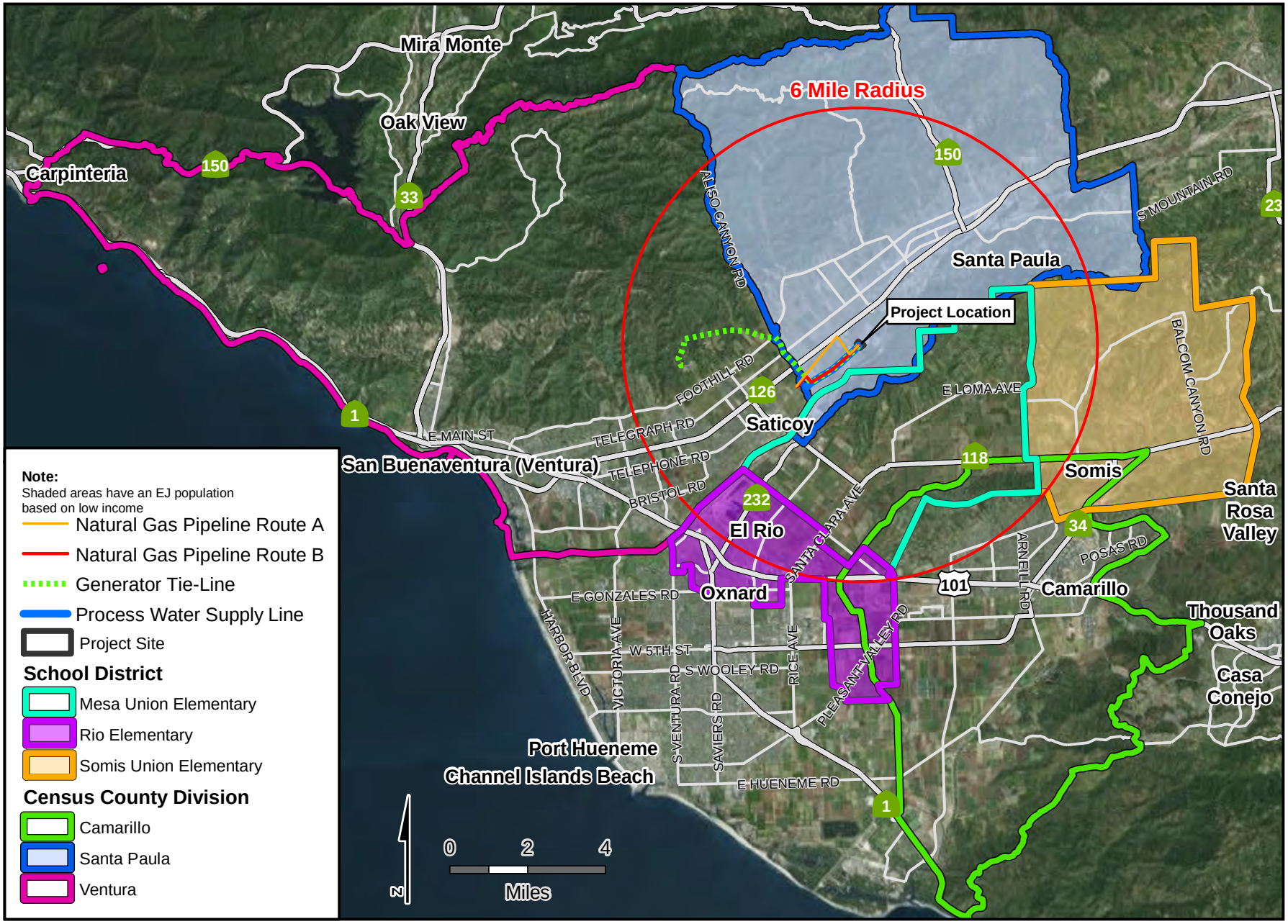
ENVIRONMENTAL JUSTICE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: Census 2010 PL 94-171 Data and CalEnviroScreen 3.0 OEHHA 2017

ENVIRONMENTAL JUSTICE - FIGURE 2

Mission Rock Energy Center - Environmental Justice Population Based on Low Income



ENVIRONMENTAL JUSTICE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: TIGER Data, S1701 ACS 5-Year Estimates, CA Dept. of Education Data Quest

HAZARDOUS MATERIALS MANAGEMENT

Alvin J. Greenberg, Ph.D.

SUMMARY OF CONCLUSIONS

In this Preliminary Staff Assessment (PSA), Energy Commission staff (staff) concludes, based on its evaluation of the proposed Mission Rock Energy Center (Mission Rock, facility, or project), along with staff's proposed mitigation measures, that hazardous materials use, storage, and transport to the site would not present a significant risk of impact to the public. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable laws, ordinances, regulations, and standards. In response to California Health and Safety Code, section 25531 et seq., Mission Rock Energy Center, LLC, a wholly owned subsidiary of Calpine Corporation (Calpine, the applicant), would be required to develop a Risk Management Plan (RMP). To ensure the adequacy of this plan, staff's proposed conditions of certification require that the RMP be submitted for concurrent review by the Ventura County Environmental Health Division - Hazardous Materials Program (VCEHD; the Certified Unified Program Agency or CUPA) and Energy Commission staff. In addition, staff's proposed conditions of certification require staff review and approval of the RMP and other safety plans prior to delivery of any bulk hazardous materials to the project site. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia, other hazardous materials used and stored at the project, and site security.

INTRODUCTION

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

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide them with special personal protective equipment (PPE) 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.

There have been many verbal and written comments from members of the public, the city of Santa Paula, the Briggs School District, and the Ventura County Sheriff's Office, concerning hazardous materials use at and transportation to this proposed power plant. Staff has noted that most of the questions concern the accidental release of toxic chemicals or fires at the power plant, traffic accidents on SR-126 and Briggs road during peak school bus and parent vehicular traffic, the risks to hazardous materials storage tanks at a power plant built in a flood zone, the potential hazards of the Li-ion batteries

at the power plant, and site security during both construction and commercial operation. Staff has attempted to address these concerns in this section of the PSA and in the **Worker Safety/Fire Protection** and **Soil and Water** sections.

Project Description

The applicant is proposing to construct, own, and operate a natural gas fired electrical generating plant in Ventura County, California west of the city of Santa Paula near State Route (SR) 126. It would be located on a 9.79 acre parcel paved with asphalt and concrete and currently being used as a storage facility for recreational vehicles and boats at the end of Mission Rock Road.

As proposed, the project would consist of five simple-cycle combustion turbine generators (CTGs), rated at a nominal generating capacity of 255 megawatts (MW), co-located with battery units for the storage of electricity that can deliver an additional 25 MW/100MWh (25 MW for a period of four hours). The five CTGs would be equipped with selective catalytic reduction (SCR) air emissions control equipment and associated support equipment for nitrogen oxide (NOx) and an oxidation catalyst carbon monoxide (CO) and volatile organic gas (VOC) control. The 25 MW/100 MWh battery energy storage system would be installed at the project site. The system can be operated in conjunction with the thermal power plant or separately. The batteries would be lithium-ion and/or flow types. The storage system would consist of three main components: batteries, inverters, and balance of plant (BOP) (i.e., step-up transformers, site controller). The batteries would be enclosed to minimize fire protection requirements and provide secondary containment for spills (see section on **Worker Safety and Fire Protection** of this document for further discussion of the potential for fires and explosions of the batteries and mitigation measures proposed). The batteries would be stored in 20 onsite metal buildings that would be arranged along the south and western edges of the project footprint.

The CTGs would be designed to burn only natural gas. Natural gas would be delivered to the project via a tap off of the existing Southern California Gas Company (SoCalGas) natural gas Line 404 and 406 via an approximately 2.4-mile-long pipeline. Three potential gas pipeline routes were under consideration (see Hazardous Materials Management Figure 1): One would extend from the Line 404/406 location north to the rail road, then northeast along the railway corridor to the Todd Barranca, then south along the western side of the Barranca until it reaches the T-line and water service corridor and then east in this corridor until it reaches the project site. The other would go directly south by south east from the Line 404/406 location to the water service corridor and follow that corridor all the way to the power plant. A third potential gas pipeline route was reviewed by staff and rejected because of safety concerns about the section of that pipeline route near the Ventura County Todd Road Jail. The new gas supply piping would consist of a 16-inch-diameter pipeline. A minimum delivery pressure of 350 pounds-per-square-inch-gauge would be provided by SoCalGas. Three electric-driven fuel gas compressors would be provided at the power plant site to boost the pressure to that required by the CTGs. The gas compressors would be located outdoors and housed in an acoustical enclosure in order to reduce the compressor noise level. Recycled water from the Limoneira Company would be used for service water, chiller fill

and makeup, and for fire protection. Potable water would be used for safety showers, eye-wash stations, drinking water, and sanitary facilities.

Aqueous ammonia (19.5 percent ammonia in aqueous solution) would be used to control oxides of nitrogen (NOx) emissions from the combustion turbine by means of a process called selective catalytic reduction (CAL 2015a, page 5.5-8). The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with the use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form, which is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high down-wind concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia, and the slow mass transfer from the surface of the spilled material limits emissions from such spills.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses would be present at the proposed project. No acutely toxic hazardous materials would be used on site during construction, and none of these materials pose significant risk of off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility. Handling of hazardous materials during construction would follow best management practices (BMPs) to minimize environmental effects (CAL 2015a Section 5.5.4.1). Although no natural gas is stored on the site, the project would involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. This document addresses all potential impacts associated with the use and handling of hazardous materials.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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 and other requirements. This list is not exhaustive but contains the most important LORS.

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

Applicable LORS	Description	Mission Rock Consistency
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).	**Consistent. HAZ-1** requires that the project owner provide a list of all hazardous materials, their amount. Concentration, and location on-site.
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.	**Consistent. HAZ-2** requires a Hazardous Materials Business Plan (HMBP) which is required by section 112r of the Clean Air Act.
The CAA section on risk management plans (42 USC §112(r))	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.	**Consistent. HAZ-2** requires a Risk Management Plan (RMP) which is required by section 112r of the Clean Air Act.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.	**Consistent. HAZ-8** requires an Operations Security Plan that includes requirements for hazardous materials delivery vendors to follow.
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.	**Consistent. HAZ-8** requires an Operations Security Plan that includes requirements for hazardous materials delivery vendors to follow.
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.	**Consistent. HAZ-2** requires a Spill Prevention Control and Countermeasures Plan (SPCC Plan).
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.	**Consistent. HAZ-10**, the section below on natural gas hazard assessment, and AFC section 4.0 describe how the natural gas pipeline would be built and maintained.
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.	**Consistent.** See discussion on natural gas pipeline safety in this PSA below.

Applicable LORS	Description	Mission Rock Consistency
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.	**Consistent.** See discussion on natural gas pipeline safety in this PSA below.
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.	**Consistent. HAZ-8** requires an Operations Security Plan that includes requirements for site security including perimeter fencing, breach detection, guards, and other requirements.
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.	**Consistent. HAZ-2** requires a Risk Management Plan (RMP), **HAZ-3** requires a Safety Management Plan**, HAZ-5** requires the use of certain tanker trucks when transporting aqueous ammonia to the site, **HAZ-6** requires only one transportation route, **HAZ-9** prohibits the use of natural gas for piping purging and cleaning, and **HAZ-12** prohibits time-of-day tanker truck delivery when the transportation route is busy with school children.
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.	**Consistent. HAZ-2** requires a Risk Management Plan (RMP) to be submitted to the CUPA and the CPM.
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.”	**Consistent.** Implementation of all engineering and administrative controls outline in the AFC, this section of the PSA, and all HAZ conditions of certification, including **HAZ-11**.

Applicable LORS	Description	Mission Rock Consistency
Title 19, California Code of Regulations, Division 2, Chapter 4.5, Articles 1-11	Sets forth the list of regulated substances and thresholds, the requirements for owners and operators of stationary sources concerning the prevention of accidental releases, the accidental release prevention programs approved under Section 112 of the federal Clean Air Act (CAA) Amendments of 1990 and mandated under the CalARP Program, and how the CalARP Program relates to the state's Unified Program.	**Consistent. HAZ-2** requires a RMP and a HMBP to be submitted to the CUPA and the CPM.
Title 22, California Code of Regulations, Chapter 14, Article 10	The design requirements set forth for new tank construction and secondary containment requirements for hazardous chemicals and waste.	**Consistent. HAZ-4** requires certain design specifications for the aqueous ammonia storage tank.
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.	**Consistent.** Implementation of all engineering and administrative controls outline in the AFC, this section of the PSA, and all HAZ conditions of certification.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.	**Consistent.** See discussion on natural gas pipeline safety below in this PSA.
Local (or locally enforced)		
Ventura County Ordinance Code Division 4, Chapter 5, Articles 1.4 and 5.0	The VCEHD, as the CUPA, supplements and implements the provisions of Chapter 6.95 of the CA H&S Code sections 25500 et seq pertaining to HMBPs and RMPs to be prepared by business entities and allows the County to collect fees for oversight.	**Consistent. HAZ-2** requires a RMP and a HMBP to be submitted to the CUPA and the CPM.
Ventura County Ordinance #30 adopted Oct. 2016	Adopted the 2016 California Fire Code as the VC fire Code.	**Consistent.** See discussion below.
Ventura County Ordinance #4496 adopted Jan. 2017	Adopted the 2016 Ventura County Building Code which includes by reference parts of the current 2016 California Building Code (Title 24) and establishes, in part, codes for seismic design criteria.	**Consistent.** See discussion below and on seismic hazards.

The Certified Unified Program Agency (CUPA) with the responsibility to review the Hazardous Materials Business Plans (HMBP), Risk Management Plans (RMP), and Spill Prevention Control and Countermeasures (SPCC) filed by businesses located within Ventura County that are not located in a municipality that has its own CUPA is the Ventura County Environmental Health Division - Hazardous Materials Program (VCEHD). Construction and design of the buildings and vessels storing hazardous materials would meet the appropriate seismic requirements of the latest adopted (2016 or later) California Building Code and the latest adopted (2016) California Fire Code.

SETTING

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

- local meteorology;
- terrain characteristics; and,
- location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

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

Recorded wind speeds and directions are described in the **Air Quality** section 5.1.2.3 of the Application for Certification (AFC) (CAL 2015a). In response to staff's Data Request #109, the applicant conducted an Off-site Consequence Analysis of two aqueous ammonia spill scenarios (CH2M 2017a). Staff agrees that the applicant's meteorological input assumptions for the modeling, the use the U.S. EPA-approved air dispersion model ALOHA (Aerial Locations of Hazardous Atmospheres), the assumptions of F-stability (stagnated air, very little mixing), wind speed of 1.5 meters per second, and the maximum temperature recorded in the area in the last three years, are appropriate for conducting the worst-case off-site consequence analysis (CH2M 2017a).

TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The existing site topography is virtually flat, with a gentle slope south towards the Santa Clara River. The site lies within the Santa Clara River Valley and thus low-elevation mountains exist to the south across the Santa Clara River and to the north are the much higher Tehachapi Mountains with elevations as high as Mount Pinos at 8,831 feet. The existing site is currently within the 100-year flood plain of the Santa Clara River thus raising issues about potential flooding of the site. The applicant has chosen to address this by raising the entire site an additional ten feet above the existing grade by importing fill material (CH2M 2016g; CH2M 2017b. see also section on **Soil and Water Resources** in this document for a more thorough assessment of this issue).

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in

the area surrounding a project site may have a major bearing on health risk. The nearest sensitive receptor would be the Briggs Elementary School located approximately 1.1 miles NE of the proposed site. The nearest resident would be approximately 940 feet (~2 average city blocks) to the northeast on Mission Rock Road and a second residence at ~1025 feet (CAL 2015a, page 5.5-1). The nearest commercial/industrial location would be the Granite Construction Asphalt Plant directly on the east side of the site fence line. The Ventura County Todd Road Jail would be located ~940 feet from the proposed site. In conversations with the Ventura County Sheriff's Office staff (personal and confidential communication with Energy Commission staff due to the security aspects discussed), it was learned that sometime in the near future, a new medical wing of the jail would be built north of the existing jail housing wing and a new jail housing wing would be constructed south of the existing jail housing wing on the immediate north side of Shell Road. This would place a jail housing unit within 500 feet of the proposed site and the medical wing within 1000 ft. of the proposed site. Currently the nearest hospital would be ~3.2 miles from the proposed site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. The chemicals listed in the AFC (CAL 2015a, Table 5.5.1) were evaluated. Staff's analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. To accomplish this goal, staff utilized the current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

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

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

Staff reviewed and evaluated the applicant's proposed use of hazardous materials as described by the applicant which are shown in Appendix B of this PSA. Staff's assessment followed the five steps listed below.

- Step 1: Staff reviewed the chemicals and the amounts proposed for on-site use as listed in Appendix B of this **Hazardous Materials Management** section of this PSA and determined the need and appropriateness of their use.
- Step 2: Those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off site and impact the public were removed from further assessment.
- Step 3: Measures proposed by the applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different-sized transfer-hose couplings and administrative controls such as worker training and safety management programs.
- Step 4: Measures proposed by the applicant to respond to accidents were reviewed and evaluated. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.
- Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff would propose additional prevention and response controls until the potential for causing harm to the public is reduced to an insignificant level. It is only at this point that staff can recommend that the facility be allowed to use hazardous materials.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Small Quantity Hazardous Materials

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

During the construction phase of the project, the hazardous materials proposed for use are paints, paint thinners, cleaners, solvents, sealants, gasoline, diesel fuel, motor oil, hydraulic fluid, lubricants, and welding gases. Any impact of spills or other releases of these materials would be limited to the site because of the small quantities involved, their infrequent use (and therefore reduced chances of release), and/or the temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all very low volatility and represent limited off-site hazards even in larger quantities. The applicant has stated that "construction will involve the transport of limited quantities of hazardous materials to the site and will pose minor hazards associated with their use." Staff's experience with many power plants over the

past 23 years supports this statement. Furthermore, the nature and amount of hazardous materials that would be used during construction dictate that the hazard would be insignificant. The Best Management Practices (BMPs) described in Section 5.5.5.1 of the AFC (CAL 2015a) would be implemented by construction personnel thus resulting in a potential for impacts that would be less than significant.

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

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

Large Quantity Hazardous Materials

Natural Gas

Natural gas poses a fire and/or possible explosion risk because of its flammability. Natural gas is composed of mostly methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. Although methane is colorless, odorless, tasteless, and lighter than air, odorant is added to natural gas to make even small quantities easily noticed. Methane can cause asphyxiation above 90 percent in concentration. Methane is flammable when mixed in air at concentrations of 5-14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 2012), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas. Natural gas can explode under certain confined conditions as demonstrated by the natural gas explosion at the Kleen Energy power plant in Middletown, Connecticut in February 2010 (US CSB 2010).

On June 28, 2010, the United States Chemical Safety and Hazard Board (US CSB) issued Urgent Recommendations to the United States Occupational Safety and Health Administration (OSHA), the NFPA, the American Society of Mechanical Engineers (ASME), and major gas turbine manufacturers, to make changes to their respective regulations, codes, and guidance to require the use of inherently safer alternatives to natural gas blows for the purposes of pipe cleaning (US CSB 2010). Recommendations were also made to the 50 states to enact legislation applicable to power plants that prohibits flammable gas blows for the purposes of pipe cleaning.

In accordance with those recommendations, staff proposes Condition of Certification **HAZ-9**, which prohibits the use of flammable gases for pipe cleaning (gas blows) at the facility, including during construction and after the start of operations. Fuel gas pipe

cleaning and purging shall adhere to the provisions of the latest edition of NFPA 56, the Standard for Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping Systems, with special emphasis on sections 4.4.1 (written procedures for pipe cleaning and purging) and 6.1.1.1 (prohibition on the use of flammable gas for cleaning or purging at any time).

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 applicable fire code National Fire Protection Association (NFPA) Code 37-*Installation and Use of Stationary Combustion Engines and Gas Turbines* prescribes the use of both double-block and bleed valves for gas shut off and automated combustion controls including automatic fuel gas shutoff for process upset conditions. These measures would significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures would require air purging of the gas turbines prior to start up, thereby precluding the presence of an explosive mixture. The safety management plan proposed by the applicant would address the handling and use of natural gas, and would significantly reduce the potential for equipment failure due to either improper maintenance or human error.

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered by SoCalGas via a new pipeline that would be constructed, owned, and operated by SoCalGas. The original gas pipeline route described in the AFC (CAL 2015a, page 2-10) was found to present serious problems in the section of the pipeline route along Shell Road near the Todd Road Jail. The jail administration is very concerned about the section of the proposed gas pipeline that would be buried along the south side of Shell Road (a dirt road) from west of the Todd Barranca to east through County Jail property to the site (see AFC Figure 1.2-2). The jail wastewater treatment plant is on the south side of Shell Road directly south of the jail. The wastewater pipeline from the jail to the treatment plant runs under Shell Road at that point. Trenching to place the gas pipeline along Shell Road would have to be very carefully done where it crosses the wastewater pipeline so as to not damage it. Should there be significant damage to the wastewater pipeline from trenching, future maintenance, or a gas pipeline leak or explosion, the jail would have to shut down and a costly and difficult evacuation of approximately 900 inmates conducted. Until repairs were completed, without continuously removing waste, the jail would be rendered non-functional. The Sheriff's Office requested that the Energy Commission consider requiring that the gas pipeline follow the transmission-line corridor, which would be a shorter pipeline route than presently proposed. That route would also pose a lower risk when the jail inmate housing building is expanded to be up against the north side of Shell Road.

Staff considered this matter and believes that the concern and request of the Sheriff's Office are valid. This is a special and unique situation where if the wastewater pipeline were to suffer even a short-term interruption of service, a potentially volatile and difficult situation could develop at the jail housing unit with the loss of potable water for drinking, bathing, meal service, and sanitary facilities. Transfer to another facility or the provision of portable sanitary facilities is impractical with 900 inmates housed at the jail. Prudent caution must be taken to protect the wastewater pipeline from the jail to the treatment building. It is well known that trenching and excavation activities can be a significant threat to buried pipelines of all types, including water, sewage, oil, gasoline, electrical,

fiber optic, and natural gas pipes. Even a repair of the existing jail wastewater pipeline could place a natural gas pipeline to the proposed power plant along Shell Road at risk where they cross. The literature is replete with numerous examples of underground pipelines being cut or seriously damaged by a backhoe during excavation. Indeed, the primary cause of gas infrastructure failure is excavation damage; in the 2003-2012 timeframe there were 89 pipeline excavation damage incidents reported in California (U.S. DOT 20177) Staff believes that avoidance is the surest manner in which to mitigate this potential impact to this critical jail infrastructure.

Staff requested the applicant to review the potential for two alternative natural gas pipeline routs in Data Request # 132.The applicant responded in a Data Response (CH2M 2017b) that they had no objection to the use of two alternative routes. The applicant stated that by using staff's proposed Route A or B, both beginning at the interconnection with SoCalGas lines 404 and 406, the natural gas pipeline would enter the project site in the same right-of-way as the generator tie-line and recycled water pipeline. Both Route A and B would cross Todd Barranca in this same right-of-way, instead of following Shell Road to a separate crossing of the Barranca thus obviating the need for a second crossing location under the Todd Barranca at Shell Road. The

applicant further stated that just about all of the Route A & B rights-of-way have been previously surveyed for biological and cultural resources except for short sections of each pipeline route. Further evaluation must be done for these sections. Staff concludes that using Route A or B as the natural gas pipeline route would mitigate any potential impact to the Todd Road Jail.

Accordingly, staff proposes a Condition Certification **HAZ-10** that would require the project owner to ensure that the proper studies are completed so as to identify which route the natural gas pipeline would take.

Additionally, staff has reviewed the federal, state and local existing LORS (see **Hazardous Materials Management Table 1** above) and concludes that they are sufficient to ensure minimal risks of failure of a new natural gas pipeline.

Aqueous Ammonia

Aqueous ammonia would be used to control the emission of oxides of nitrogen (NO_x) from the combustion of natural gas at Mission Rock. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. The project would have 19.5 percent aqueous ammonia solution in a new horizontal 12,000 gallon above ground storage tank (CAL 2015a, page 5.5-18). Actual storage contents would be limited to 10,200 gallons. Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose a risk of off-site impact. The use of aqueous ammonia can result in the formation and release of toxic gases (Lees 2012) in the event of a spill even without interaction with other chemicals. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that would be used and stored on site. However, the use of aqueous ammonia poses less risk than the use of the more hazardous anhydrous ammonia.

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

1. the lowest concentration posing a risk of lethality, 2,000 parts per million (ppm);

2. the immediately dangerous to life and health level of 300 ppm;

3. the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by US EPA and California; and,

4. the level considered by staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm (considered by staff to be a level of significance).

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

The applicant's Response (CH2M 2007a) to staff Data Request #109 describes the modeling parameters that were used for the worst-case accidental release of aqueous ammonia in the applicant's off-site consequence analysis (OCA). Pursuant to the California Accidental Release Program (CalARP) regulations, (federal RMP regulations do not apply to sources that store or use aqueous ammonia solutions below 20 percent), the OCA was performed for the worst-case release scenario, which would involve the failure and complete discharge of the storage tank, and an alternative release scenario which was much more likely, a spill during transfer of aqueous ammonias from a tanker truck to the storage tank. Ammonia emissions from both potential release scenarios were calculated following methods provided in the RMP off-site consequence analysis guidance (US EPA, April 1999). Potential off-site ammonia concentrations were estimated using the ALOHA air dispersion model indicating the distance from the source release point to the benchmarks of ammonia concentration.

Staff reviewed the applicant's OCA results and conducted its own OCA using ALOHA. The results of both OCAs were consistent, thus indicating to staff that the applicant's modeling was both transparent and verifiable. Both the applicant's and the staff's modeling indicated that in the event of a worst-case release, there would be a small potential for ammonia concentrations of 75 ppm to extend to 396 feet from the aqueous ammonia storage tank which would be located approximately 204 feet from the eastern fence line of the project site and 120 feet from the southern fence line. Thus, a catastrophic release of the entire contents of the storage tank could potentially impact workers inside the Granite Construction Asphalt site to the east of the facility and agricultural workers who happen to be very near the power plant fence line to the south under this worst-case release scenario. No other off-site receptors, including the residences and the jail location would experience airborne concentrations of ammonia

at or above 75 ppm. Staff concurs with the applicant's determination that the more likely alternative release scenario occurring during a tanker truck transfer operation would not pose a significant risk to off-site members of the public.

However, since the odor threshold for ammonia is around 2.6 ppm for most individuals (with some people able to smell ammonia down to 0.04 ppm), an odor of ammonia due to an accidental release in either scenario could possibly be detected for a brief period at any location near the power plant depending upon volume spilled, temperature of the day, and direction of the wind. In order to mitigate any concern of the off-site public, staff has proposed Condition of Certification **HAZ-11** which would require the project owner to purchase and use hand-held ammonia detectors for use on-site and off-site at the project owner's discretion. These ammonia detectors would also be available for use by first responders from the Ventura County Fire Department or Sheriff's Office.

Staff's proposed Condition of Certification **HAZ-4** would ensure that the aqueous ammonia secondary containment structure would include essential design elements to prevent a worst-case spill from producing significant off-site impacts. In addition, the applicant presented a probability analysis for a complete failure of the aqueous ammonia storage tank in its OCA analysis (CH2M 2017a, Table 3, page 4). This analysis estimated that the probability is very low, approximately 0.000095 per year, which is less than 1 tank per 10,000 tanks each year. Staff has determined that this estimate is consistent with other estimates staff has viewed in the past and agrees that the risk of a total tank failure is less than significant.

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

Engineering Controls

Engineering controls help to prevent accidents and releases (spills) from moving off site and affecting communities by incorporating engineering safety design criteria in the design of the project. The engineered safety features proposed by the applicant for use during construction and operations at the project include (CAL 2015a, Section 5.5.5):

Construction

- Refueling and maintenance of vehicles and equipment will occur only in designated areas that are either bermed or covered with concrete, asphalt, or other impervious surfaces to control potential spills. Employees will be present during refueling activities.
- Vehicle and equipment service and maintenance will be conducted only by authorized personnel.
- Refueling will be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans will be placed under equipment to catch potential spills during servicing.
- All disconnected hoses will be placed in containers to collect residual fuel from the hoses.
- Vehicle engines will be shut down during refueling.
- No smoking, open flames, or welding will be allowed in refueling or service areas.
- Refueling will be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
- When refueling is completed, the service truck will leave the site.
- Service trucks will be provided with fire extinguishers and spill containment equipment, such as absorbents.
- Should a spill contaminate soil, the soil will be put in containers and disposed of as appropriate. All containers used to store hazardous materials will be inspected at least once per week for signs of leaking or failure. All maintenance and refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook that will be maintained onsite.

Operations

- Provision of an automatic sprinkler system for indoor hazardous material storage areas.
- Provision of an exhaust system for indoor hazardous material storage areas.
- Separation of incompatible materials by isolating them from each other with a noncombustible partition.
- Spill control in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment is required to hold the entire contents of the tank plus the volume of water for the fire suppression system that could be used for fire protection for a period of 20 minutes in the event of a catastrophic spill.

Administrative Controls

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

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

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;
- safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and,
- emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention.

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

The applicant would be required to develop a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. Staff considers that an accidental release of aqueous ammonia during transfer from the delivery truck to the storage tank, although likely much smaller in spilled volume than a worst-case spill, would be the most probable accident scenario and therefore proposes Condition of Certification **HAZ-3** requiring the development of a safety management plan. A safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning, and operations would further reduce the risk of any accidental release not addressed by the proposed spill-prevention mitigation measures and the required RMP. This plan would additionally prevent the mixing of incompatible materials that could result in toxic vapors.

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

On-Site Spill Response

In order to address the issue of spill response, the facility would prepare and implement an emergency response plan that would include information on hazardous materials contingency and emergency response procedures, spill containment and prevention

systems, personnel training, spill notification, on-site spill containment, and prevention equipment and capabilities, as well as other elements. Emergency procedures would be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

The emergency first responders to a hazardous materials incident at Mission Rock would be from the Ventura County Fire Department (VCFD) and would have a response time of approximately 5 minutes. If needed, a full hazardous materials response team would be provided from the VCFD in 12 minutes. Staff determined that the VCFD response team would be capable of responding to a hazardous materials emergency call from the Mission Rock power plant (McNeil 2017).

Transportation of Hazardous Materials

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

Staff reviewed the applicant's proposed transportation route for hazardous materials delivery. Trucks would travel on SR-126, exiting on Briggs Road and then to Pinkerton Road to Mission Rock Road to Shell Road and into the facility. Pinkerton Road has an "Arizona Crossing" where drainage water that runs under SR-126 flows over Pinkerton Road. An "Arizona Crossing" is a type of road crossing that allows a waterway to run over a paved section of road and was popularized in the desert southwest of the United States where it was not necessary to provide drainage under the roadway due to the infrequent filling of streams and arroyos in that area. Because of Arizona's lack of lakes and rivers, bridge and drainage infrastructure was not as necessary as in other states. However, in major rain storms and flood events, which can occur in Arizona and California, water coming over a road and onto an "Arizona Crossing" can at times be dangerous. As such, it would not be appropriate or safe for a vendor to deliver hazardous materials to the proposed power plant when water is indeed flowing over Pinkerton Road. Therefore, to prevent a significant impact caused by a hazardous materials tanker or truck being washed off of Pinkerton Road, staff is proposing Condition of Certification **HAZ-6** which would require the project owner to check the status of water going over Pinkerton Road at its "Arizona Crossing" and notify any hazardous material transport vendor to not transport any hazardous material to the power plant until Pinkerton Road is free of water and safe for transport.

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

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

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main freeway of SR-126. Staff believes it is appropriate to rely upon the extensive regulatory program that applies to the shipment of hazardous materials on California highways to ensure safe handling in general transportation (see Federal Hazardous Materials Transportation Law 49 USC §5101 et seq., DOT regulations 49 CFR subpart H, §172–700, and California Department of Motor Vehicles (DMV) regulations on hazardous cargo). These regulations also address the issue of driver competence.

To address the issue of tanker truck safety, aqueous ammonia would be delivered to the proposed facility in DOT-certified vehicles with design capacities of less than 7,000 gallons. These vehicles would be designed to meet or exceed the specifications of MC307/DOT 407. These are high-integrity vehicles designed to haul caustic materials such as ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-5** to ensure that, regardless of which vendor supplies the aqueous ammonia, delivery would be made in a tanker that meets or exceeds the specifications prescribed by these regulations.

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

Staff used the data from the Harwood studies (Harwood 1990 & Harwood 1993) to determine that the truck accident rate for the transportation of materials in the U.S. is between 0.64 and 13.92 per 1,000,000 miles traveled on well-designed roads and highways. The applicant estimated that routine operation of the proposed project would require two to three ammonia deliveries per month (approximately 30 per year), each delivering about 7,500 gallons (CAL 2015a, page 5.5-8). Each delivery would travel approximately 1.2 miles from SR-126 to the facility.

This would result in a maximum of ~3.6 miles of tanker truck travel in the project area per month during peak operation (with a full load) and an average of approximately 36 miles of tanker truck travel per year (assuming three deliveries per month). Staff has determined that the risk over this distance is insignificant.

However, staff recognizes that while SR-126 meets the definition of a "well-designed road", Pinkerton Road, Mission Rock Road, and Shell Road do not. Staff therefore conducted further analysis of risks driving on these roads, even for a short distance. Staff used a transportation risk assessment model (based on Harwood 1993, Brown 2000 & Guidelines for Chemical Transportation Risk Analysis 1995) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from highway SR-126 to the facility via Briggs Road to Pinkerton Road to Mission Rock Road to Shell Road and then into the facility. Results show a total annual risk of about one in 3.8 million for 30 deliveries over a year. This risk was calculated using accident rates on various types of roads, but in this case, rural single lane. Although it is an extremely conservative model in that it includes accident rates per

million miles of trucking as a mode of transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes such as an open-top truck transporting drums, the results still show that the risk of a transportation accident is insignificant. This risk assessment model does not estimate the risk of a tanker truck spilling its contents, only that of an accident occurring. The risk of a leak would be even lower.

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

In order to further ensure that the risk of an accident involving the transport of aqueous ammonia to the power plant is insignificant, staff proposes Condition of Certification **HAZ-6**, which would require the use of only the specified and approved route for delivery of hazardous materials to the site.

In addition, concerns have been raised by the Briggs School District regarding delivery of large amounts of liquid hazardous materials to the power plant during peak school bus and parent driver times in the morning and afternoon. The concern is limited to increased traffic at the Briggs Road and SR-126 interchange during times in the morning and afternoon of school days when school buses and parents use that interchange to transport children north from SR-126 on Briggs Road to the Briggs Elementary School. Should a tanker truck accident that blocks that interchange occur during those peak school-related travel times, a significant number of children would either be delayed or, if a spill were to occur, be exposed to the hazardous material that leaked from the tanker. Staff has determined that, although the risk of a tanker truck spilling while transporting hazardous materials to the power plant is less than significant, it is not "zero", and that the concern can be avoided with a simple avoidance of that intersection during peak school traffic times. Staff has determined that in other Energy Commission siting cases the timing of the transport of bulk liquid hazardous materials during the day to avoid peak school bus times does not inconvenience the power plant. Accordingly, staff proposes an additional Condition of Certification **HAZ-12** which would require the project owner to coordinate tanker deliveries of aqueous ammonia or any other bulk liquid hazardous material with the school district so as to prohibit the delivery during peak school bus and children transport times at the intersection of SR-126 and Briggs Road.

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

Lithium-ion Batteries

A state-of-the-art feature of this proposed power plant would be the use of Lithium-ion (Li-ion) battery power. In Data Request #113, staff requested the applicant to provide additional information about the hazards associated with the 20 Li-ion battery units proposed to be located on the site. Staff asked for a Hazard Analysis of the potential for fire, explosion, and leaks involving any or all of the twenty Lithium-ion battery units, a brief history of known fires, explosions, and leaks involving these specific Lithium-ion batteries and those that are very similar, and the manufacturer's product sheet and a Safety Data Sheet (SDS) for the batteries. The applicant responded that "statistically, lithium-ion batteries are very reliable", that failure rates are very low (on the order of 1 in 10 million cells) and acknowledged that an incident related to the batteries can be serious and include fire and explosions (CH2M 2016c). A manufacturer's SDS for the batteries was provided in the data response as attachment DR113-1.

Staff conducted its own evaluation of the safety of Li-ion battery packs and concluded that the proposed use of Li-ion batteries poses a unique fire hazard. A review of the safety of these batteries finds that these batteries contain a flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150° C or 302° F) when damaged or abused (e.g., mechanical damage or electrical overcharging). If a fire ensues, it may burn rapidly with flare-burning effect and may ignite other batteries in close proximity. Fire fighter contact with the battery electrolyte may be irritating to skin, eyes and mucous membranes, the fire will produce irritating, corrosive, and/or toxic gases, and may even produce extremely toxic hydrogen fluoride gas. The fumes from a fire, therefore, may cause dizziness, severe eye and respiratory system irritation/damage, or suffocation and thus PPE (Personal Protective Equipment) may be required to suppress a Li-ion battery fire. These batteries are similar to the ones found in cell phones, in the early B-787 commercial jet, and in Tesla electric automobiles, of which a few have over-heated and caught fire (CH2M 2016c; U.S. DOT 2016).

Fire suppression can be problematic and the use of water spray, fog, or regular foam have been recommended (U.S. DOT 2016) Dept. of Transportation, Pipeline and Hazardous Materials Safety Administration, *Emergency Response Handbook* for use by first responders, Guide 147. 2016). A more thorough discussion of impacts, proposed mitigation of hazards, and worker training can be found in the section on **Worker Safety and Fire Protection**.

Seismic Issues

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

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused both to several large storage tanks and to smaller tanks associated with the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Staff reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks failed as a result of that earthquake. Staff has also reviewed the impacts of the earthquakes in Haiti (January 12, 2010; magnitude 7.0) and Chile (February 27, 2010; magnitude 8.8). The building standards in Haiti are not as stringent as California while those in Chile are similar to California building seismic codes. Reports show a lack of impact on hazardous materials storage and pipelines infrastructure in both countries. For Haiti, this most likely reflects a lack of industrial storage tanks and gas pipelines; for Chile, this most likely reflects the use of strong safety codes. Staff also conducted an analysis of the codes and standards which should be followed when designing and building storage tanks and containment areas to withstand a large earthquake. Staff notes that the proposed facility would be designed and constructed to the standards (including seismic design category D) of the most recent (2016 or later) California Building Code (CAL 2015b, Appendix 2A, page 2A-6).

Therefore, on the basis of what occurred in Northridge (with older tanks) and the lack of failures during the Nisqually earthquake (with newer tanks) and in the 2010 Chilean earthquake (with rigorous seismic building codes), and given that the construction of the project would comply with stringent California Building Codes, staff determines that tank failures during seismic events are not probable and do not represent a significant risk to the public.

Site Security

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a) and the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002). The North American Electric Reliability Corporation (NERC) published an updated *Security Guideline for the Electricity Sector: Physical Security* (2011) and the U.S. Department of Energy (U.S.DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002).

The energy generation sector is one of 14 areas of critical infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S Department of Homeland Security published in the Federal Register (6 CFR Part 27) an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. This rule was implemented on November 2, 2007, with the publication of the list of chemicals in Appendix A to the rule. While the rule applies to aqueous ammonia solutions of 20 percent or greater, and this proposed facility plans to utilize a 19.5 percent aqueous ammonia solution, staff maintains that all power plants under the jurisdiction of the

Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

The applicant has stated that a security plan would be prepared for the proposed facility and would include a description of perimeter security measures and procedures for evacuating, notifying authorities of a security breach, monitoring fire alarms, conducting site personnel background checks, site access, and a security plan and background checks for hazardous materials drivers. Perimeter security measures utilized for this facility may include security guards, security alarms, breach detectors, motion detectors, and video or camera systems (CAL 2015a, page 5.5-14).

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

The goal of these conditions of certification is to provide for the minimum level of security for power plants necessary for the protection of California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for this 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 would be used, in part, to determine the severity of consequences of a catastrophic event.

In order to determine the level of security, Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Corporation's (NERC) 2011 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of low vulnerability due to the rural setting and distant proximity to sensitive receptors. Staff therefore proposes that certain security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

These security measures include perimeter fencing and breach detectors, alarms, site access procedures for employees and vendors, personnel background checks, and law enforcement contacts in the event of a security breach. The perimeter fencing shall include slats or other methods to reduce and restrict the visibility of the site from off-site locations. Site access for vendors shall be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors would have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner would be required, through the use of contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements for hazardous materials vendors to prepare and implement security plans (as per 49 CFR 172.800), and to ensure that all hazardous materials drivers are in compliance through personnel background

security checks (as per 49 CFR Part 1572, Subparts A and B). The CPM may authorize modifications to these measures or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC, after consultation with both appropriate law enforcement agencies and the applicant.

In private conversations with the Ventura County Sheriff's Office on security matters, the Sheriff's Office expressed concern regarding the potential increased work-load the presence of a "controversial power plant" could place on the Sheriff's Office. The eastern part of Ventura County from the Todd Jail to the LA County line is understaffed (exact number of patrol officers and radio cars is confidential). It was noted that unlike the fire departments which are linked through *automatic* mutual aide, the Santa Paula Police Department and the Ventura County Sheriff's Office have mutual aid which must be *requested*; it is not automatic. This could lead to an increased response time to the power plant.

The Sheriff's Office, therefore, identified a direct impact posed by the power plant on the Ventura County Sheriff's Department and that the direct impact could be mitigated by the provision of one additional deputy FTE (3 deputies each for an 8-hr. shift) assigned to the western end of the eastern patrol service area and gave these reasons as the basis:

1. Due to the controversial nature of this power plant, the fact that this small community has not had an industrial facility of this complexity before, and the significant opposition to the power plant, increased law enforcement presence could be necessary for crowd control (demonstrations, blockades, etc.) primarily during construction.

2. It is reasonable to plan for an increase in prevention and/or investigation of malicious mischief and/or vandalism at the power plant.

3. There may be need to conduct investigations of threats made towards the power plant and power plant personnel.

Staff gave serious consideration to the views expressed by the Ventura County Sheriff's Office. After discussion with other staff, it was felt that, based upon the Energy Commission's past experience with other controversial new power plant siting cases, the main threat of public disturbance would be during the siting process and the main threat of vandalism would be during construction. Accordingly, staff recommends that, during construction, at least two security guards hired by the project owner be on-site during times of on-going site preparation/construction and that this requirement could be adjusted upwards or downwards either by direction of the CPM or by request of the project owner to the CPM to better reflect actual conditions. This proposed requirement and others is reflected in staff's proposed Condition of Certification **HAZ-7**.

The Sheriff's Office and the Ventura County Fire Department also expressed a desire to be able to obtain live real-time feeds from the power plant CCTV when a 911 call comes in from the power plant requesting assistance (police or fire) and when a suspicious event occurs outside the power plant but is unrelated to the power plant. Access to power plant CCTV views along the Shell Road perimeter and near the main entrance on

Mission Rock Road would be helpful in investigating incidents in the area. Staff agrees that this request would most certainly supplement the Sheriff's Office surveillance drone ability to view the area and thus staff encourages the project owner to discuss this matter with the Sheriff's Office and the VCFD and arrive at a friendly agreement to provide live feeds when appropriate.

CUMULATIVE IMPACTS AND MITIGATION

Staff has developed a Mission Rock Master Cumulative Project List by contacting planning staff with Ventura County and the cities of Fillmore, Santa Paula, and San Buenaventura (Ventura). Staff also reviewed proposed project information from other agencies, including CALTRANS and the CEQANet database to develop a list of past, present, and reasonably foreseeable projects.

Staff used this information and maps of locations to analyze the potential for the existence of cumulative hazardous materials management impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. Staff has determined that while cumulative impacts are theoretically possible, they are not probable because of the many safeguards required to be implemented to both prevent and control an uncontrolled release at all locations which store or use hazardous materials. The chances of one uncontrolled release occurring are remote. The chance of two or more occurring simultaneously, with resulting airborne plumes comingling to create a significant impact, are even more remote.

Staff also has determined that accidental hazardous materials releases and spills most often have a very limited area of impact as the plume usually dissipates rapidly as distance from the spill location increases. Given the locations of exiting business in the Mission Rock area and the hazardous materials used at those locations, staff concludes that a cumulative risk to the public is insignificant.

The applicant would develop and implement a hazardous materials handling program for the 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 that could result in off-site impacts. It is unlikely that an accidental release that has very low probability of occurrence would independently occur at the Mission Rock site and another facility at the same time and that both plumes would comingle. Therefore, staff concludes that the facility would not contribute to a significant hazardous materials-related cumulative impact.

ENVIRONMENTAL JUSTICE

As discussed in the **Environmental Justice** section of this PSA, **Environmental Justice Figure 1** shows the presence of an environmental justice (EJ) population based on race and ethnicity within a six-mile radius of the project site. **Environmental Justice**

Figure 2 and **Table 3** shows that the below-poverty-level population in Santa Paula Census County Division, and the population receiving free or reduced price meals in the Rio Elementary School District and Somis Union School District constitute an EJ population based on low income.

Additionally, much of the land located north and southeast of the site has agricultural uses. There are a number of farm workers within the vicinity of the proposed site at any given time. Due to the presence of an EJ population among residents and farm workers, this analysis must identify whether the construction and operation of the proposed facility could have significant, unmitigated impacts or disproportionate impacts on an EJ population.

Under hazardous materials management, the two potential incidents that could affect the EJ population would be a worst case release from the aqueous ammonia storage tank and the transportation of hazardous material by vehicle from SR-126 to the project site. Although a highly unlikely event (see discussion above), the worst case release would not significantly impact the farm workers or any off-site receptors because the mitigation measures proposed by the applicant and by staff in proposed Conditions of Certification **HAZ-3, 4, 5, 6 and 11**. These conditions would mitigate the risk to less than significant for any population, including the most sensitive population such as an EJ population, and thus would not have a disproportionate impact on the EJ population. Furthermore, it is important to note that any exposure to a hazardous material proposed for use at this power plant due to an accidental release would be short-term (termed "acute") and involve chemicals (such as ammonia) that would not remain in a person's body.

Trucks delivering hazardous materials would be travelling through EJ communities on SR-126. While an accident could potentially occur involving either an aqueous ammonia or other hazardous material delivery truck, an accidental release of the hazardous materials cargo would still be unlikely. The proposed Conditions of Certification **HAZ-5** and **HAZ-6,** combined with the hazardous materials risk analysis staff presented earlier in this technical section on transportation of hazardous materials along with emergency response measures discussed in the section on **Worker Safety and Fire Protection**, all combine to demonstrate that the risk of impact resulting from hazardous materials transportation to the project site is less than significant to any population, including the most sensitive population such as an EJ population, and thus would not have a disproportionate impact.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the proposed project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of hazardous materials management.

CONCLUSIONS

Staff's evaluation of the proposed project with proposed mitigation measures indicates that hazardous material use would pose no significant impact to the public. Staff's analysis also shows that there would be no significant cumulative impact. Conditions of Certification would minimize the risk of project impact to any population, including the EJ population, to less than significant with no disproportionate impacts. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable LORS. In response to California Health and Safety Code, section 25531 et seq., the applicant would be required to develop and implement a Risk Management Plan (RMP). To ensure the adequacy of the RMP, staff's proposed conditions of certification require that the RMP be submitted for concurrent review by the VCEHD and by Energy Commission staff. In addition, staff's proposed Condition of Certification **HAZ-2** requires the review and approval of the RMP by staff prior to the delivery of any hazardous material to the facility for commissioning or operations. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia, in addition to site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification to ensure that the project would be designed, constructed, and operated to comply with all applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release. If all mitigation measures proposed by the applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials would not present a significant risk to the public.

Staff proposes nine conditions of certification mentioned throughout the text above, and listed below. Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in **Appendix B** of this staff assessment, unless there is prior approval by the Energy Commission CPM. Condition of Certification **HAZ-2** requires that an RMP, Hazardous Materials Business Plan (HMBP), and a Spill Prevention Control and Countermeasure Plan (SPCC) be submitted and approved prior to the delivery of any hazardous materials for use in commissioning or operations.

Condition of Certification **HAZ-3** would require the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage tank be designed to appropriate standards. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-5 and HAZ-6. HAZ-12** addresses time-of-day delivery via tanker truck of bulk hazardous materials using the SR-126 and Briggs Road intersection so as to avoid times of heavy use by school buses and parent transporting their children to school.

Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-7** and **HAZ-8**.

Condition of Certification **HAZ-9** addresses the use of natural gas and prohibits its use to clear debris from pipes. Proposed condition **HAZ-10** would proscribe the natural gas pipeline route as one of two identified so as to avoid risk to the Todd Road Jail wastewater treatment pipeline and future expansion of jail inmate housing. Proposed

condition **HAZ-11** would require the project owner to purchase, maintain, and have available for use, two hand-held ammonia sensors for use on-site and off-site.

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, after every approved change in Appendix B and in the Annual Compliance Report, the Hazardous Materials Business Plan's list of hazardous materials and quantities contained at the facility.

HAZ-2 The project owner shall concurrently provide a Hazardous Materials Business Plan (HMBP), a Spill Prevention Control and Countermeasure Plan (SPCC), and a Risk Management Plan (RMP) to the Ventura County Environmental Health Division - Hazardous Materials Program (VCEHD, the CUPA) and the CPM for review. After receiving comments from the VCEHD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Hazardous Materials Business Plan and RMP shall then be provided to the VCEHD for information and to the CPM for approval.

Verification: At least 30 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final HMPB and SPCC to the CPM for approval.

At least 30 days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the VCEHD for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least 30 days prior to the delivery of any liquid hazardous material to the facility for commissioning or operations, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to the ASME Code for Unfired Pressure Vessels, Section VIII, Division 1. The storage tank shall be protected by a secondary containment area and subsurface vault capable of holding precipitation from a 24-hour, 25-year storm event plus 100 percent of the capacity of the largest tank within its boundary. The containment vault shall be an underground vault that is open to receive spilled aqueous

ammonia from a grate no larger than 2 feet in diameter. The final design drawings and specifications for the ammonia storage tank, secondary containment basin, transfer pad, and subsurface vault shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to start of construction of the aqueous ammonia storage and transfer facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank, ammonia pumps, ammonia detectors, secondary containment basin, and subsurface vault 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 MC-307/DOT-407.

Verification: At least 30 days prior to receipt of aqueous ammonia on site, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-6 Prior to initial delivery, the project owner shall direct vendors delivering any hazardous material to the site to use only the route approved by the CPM (from SR-126 to the Briggs Road exit, to Pinkerton Road to Mission Rock Road to Shell Road to the facility). The project owner shall obtain approval of the CPM if an alternate route is desired. Furthermore, during periods of heavy rain, the project owner shall check the status of water going over Pinkerton Road at its “Arizona Crossing” and notify any hazardous material transport vendor not to transport any hazardous material to the power plant until Pinkerton Road is free of water and safe for transport.

Verification: At least 60 days prior to initial receipt of any hazardous material listed in Appendix B of this section, and at least 10 days prior to a new vendor making a delivery, the project owner shall submit to the CPM for review and approval a copy of the letter containing the route restriction directions and the prohibition of delivery if notified of water going over Pinkerton Road at its “Arizona Crossing” that were provided to hazardous materials vendors.

HAZ-7 Prior to commencing construction, a stand-alone site-specific Construction Site Security Plan for the site preparation and 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 and the laydown area;

2. security guard(s);

3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;

4. written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;

5. protocol for contacting law enforcement and the CPM in the event of suspicious activity, incident or emergency; and,

6. evacuation procedures.

Verification: At least 30 days prior to commencing site mobilization, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 The project owner shall also prepare a stand-alone site-specific security plan for the commissioning and operational phases that shall be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC Security Guideline for the Electricity Sector: Physical Security v1.9).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high and topped with barbed wire or the equivalent (and with slats or other methods to restrict visibility if a fence is selected);

2. main entrance security gate, either hand operated or motorized, and all gates shall be hardened secure gates not secured with simple chains and locks;

3. evacuation procedures;

4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;

   A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that

background investigations have been conducted on contractors who visit the project site;

6. site access controls for employees, contractors, vendors, and visitors;

7. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

8. closed circuit TV (CCTV) monitoring system, recordable (at least 90-day storage), and viewable in the power plant control room and security station (if separate from the control room) with cameras able to pan, tilt, and zoom, have low-light capability, and are able to view 100 percent of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate;

9. additional measures to ensure adequate perimeter security consisting of either:

   A. security guard(s) present 24 hours per day, seven days per week; **or**

   B. power plant personnel on site 24 hours per day, seven days per week, and perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Corporation, after consultation with both appropriate law enforcement agencies and the project owner.

Verification: At least 30 days prior to the initial receipt of hazardous materials on site for commissioning or operations, the project owner shall notify the CPM that a stand-alone site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include signed statements similar to Attachments A and B that all current project employee and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a signed statement similar to Attachment C that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-9: The project owner shall not allow any fuel gas pipe cleaning activities on site, either before placing the pipe into service or at any time during the lifetime of the facility, that involve "flammable gas blows" where natural (or flammable) gas is used to blow out debris from piping and then vented to atmosphere. Instead, an inherently safer method involving a non-flammable gas (e.g. air, nitrogen, steam) or mechanical pigging, shall be used as per the latest edition of NFPA 56, Standard for Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping Systems. A written procedure shall be developed and implemented as per NFPA 56, section 4.4.1.

Verification: At least 30 days before any fuel gas pipe cleaning activities begin, the project owner shall submit a copy of the Fuel Gas Pipe Cleaning Work Plan (as described in the 2014 NFPA 56, section 4.4.1) which shall indicate the method of cleaning to be used, what gas will be used, the source of pressurization, and whether a mechanical PIG will be used, to the CBO for information and to the CPM for review and approval.

HAZ-10 The project owner shall, after directing SoCalGas to develop a Gas Pipeline Routing and Construction Study for submittal to the CPM for review, use either Route A or Route B for the natural gas pipeline route as identified in applicant's January 3, 2017 Response to Data Request #132.

Verification: Not later than 90 days after a Final Decision is issued granting a license for the project, the project owner shall submit to the CPM for review and approval the Gas Pipeline Routing and Construction Study for the pipeline route chosen.

HAZ-11 The project owner shall purchase, maintain, and have available for use at any time, not less than two (2) hand-held ammonia sensors able to detect ammonia vapors with a detection range of at least 0 – 100 ppm and a resolution of 1 ppm or lower, for use on-site and off-site.

Verification: At least 30 days prior to receipt of aqueous ammonia on site, the project owner shall submit to the CPM for review and approval the following:

1. proof that portable ammonia detectors have been purchased and their specifications;

2. the locations where the ammonia detectors will be stored on the site;

3. a written procedure for power plant staff to maintain, calibrate, and use the detectors.

HAZ-12 Prior to initial delivery of any bulk hazardous material via tanker truck to the site, the project owner shall consult with officials of the Briggs School District regarding school bus schedules and parent driving schedules and shall prohibit vendors through contractual language from transporting aqueous ammonia to the site at times that would coincide with regular school bus/parent traffic at or near the Briggs Road and SR-126 interchange.

Verification: At least 60 days prior to initial receipt of any bulk hazardous material via tanker truck to the site, and at least 10 days prior to a new vendor making a delivery, the project owner shall submit to the CPM for review and approval copies of the contract with the tank truck vendor(s) describing the time of day limitations on deliveries, and written evidence that officials of the Briggs School District have been consulted.

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

Alvin J. Greenberg, Ph.D.

BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for, and are not binding on, discretionary decisions involving proposed facilities where many options for mitigation are feasible. The California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that

these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

Hazardous Materials Appendix A Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible Injury, or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of ten for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated eight-hour work shifts.
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	150 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

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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 - 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 Mission Rock Energy Center
Hazardous Materials Appendix B

From: CAL-2015a, Table 5.5-1 *Use and Location of Hazardous Materials*

Chemical	Use	Quantity (gallons, lbs, cu ft)	Storage Location (General Arrangement Location Code)	State	Type of Storage
Aqueous NH_3 (19.5 percent)	Control NO_x emissions through SCR	12,000 gallons	Onsite storage tank west of the chillers (21)	Liquid	Continuously onsite
R 134A (1-1-1-2-Tetrafluoroethane)	Refrigerant in the inlet air chiller system	26,960 pounds	Inlet air chiller system (57)	Liquid	Continuously onsite
Cleaning chemicals/detergents	Periodic cleaning of combustion turbine	3,000 gallons	Chemical storage tote or drums at a protected temporary storage location onsite.	Liquid	Continuously onsite
Diesel No. 2	Fuel for fire pump	200 gallons	Permanent onsite storage in above ground storage tank with secondary containment (17)	Liquid	Continuously onsite
Hydraulic oil	High-pressure combustion turbine starting system, turbine control valve actuators	150 gallons	Onsite 55-gallon drums (31)	Liquid	Continuously onsite
Laboratory reagents	Water/wastewater laboratory analysis	10 gallons	Laboratory chemical storage cabinets (stored in original chemical storage containers/bags) (31)	Liquid and granular solid	Continuously onsite
Lubrication oil	Lubricate rotating equipment (e.g., gas turbine and steam turbine bearings)	400 gallons	Onsite 55-gallon drums (31)	Liquid	Continuously onsite
Mineral insulating oil	Transformers	28,800 gallons	Inside the transformers; no mineral actually stored onsite (10, 26, 28, 43, 60, 61)	Liquid	Continuously onsite

From: CAL-2015a, Table 5.5-1 *Use and Location of Hazardous Materials*

Chemical	Use	Quantity (gallons, lbs, cu ft)	Storage Location (General Arrangement Location Code)	State	Type of Storage
Sodium bisulfite	Biocide/biofilm control for potable, fire, and service water systems	500 gallons	Water treatment chemical feed storage	Liquid	Continuously onsite; 250-gallon stackable totes inside secondary containment
Acetylene	Welding gas	185 lbs	Maintenance/Warehouse Building (31)	Gas	Continuously onsite
Oxygen	Welding gas	250 lbs	Maintenance/Warehouse Building (31)	Gas	Continuously onsite
Propane	Torch gas	300 lbs	Maintenance/Warehouse Building (31)	Gas	Continuously onsite
EPA Protocol gases	Calibration gases	25 lbs	CEMS Enclosures (11)	Gas	Continuously onsite
Cleaning chemicals	Cleaning	Varies (less than 25 gallons liquids or 100 lbs solids for each chemical)	Admin/Control Building, Maintenance/ Warehouse Building (31)	Liquid or solid	Continuously onsite
Paint	Touchup of painted surfaces	Varies (less than 25 gallons liquids or 100 lbs solids for each type)	Maintenance/Warehouse Building (31)	Liquid	Continuously onsite
Lithium Ion Batteries	Energy storage/integration	252 tons	Battery energy storage system (58)	Solid	Continuously onsite
Lead-Acid Batteries	24 volt DC battery supply	12,000 lbs	Power Distribution Center	Solid	Continuously onsite
CO_2	Fire extinguishing of turbine package	6000 cu ft	Outside of Turbine Package	Gas	Continuously onsite

cu ft = cubic feet

Table 5.5-2 Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

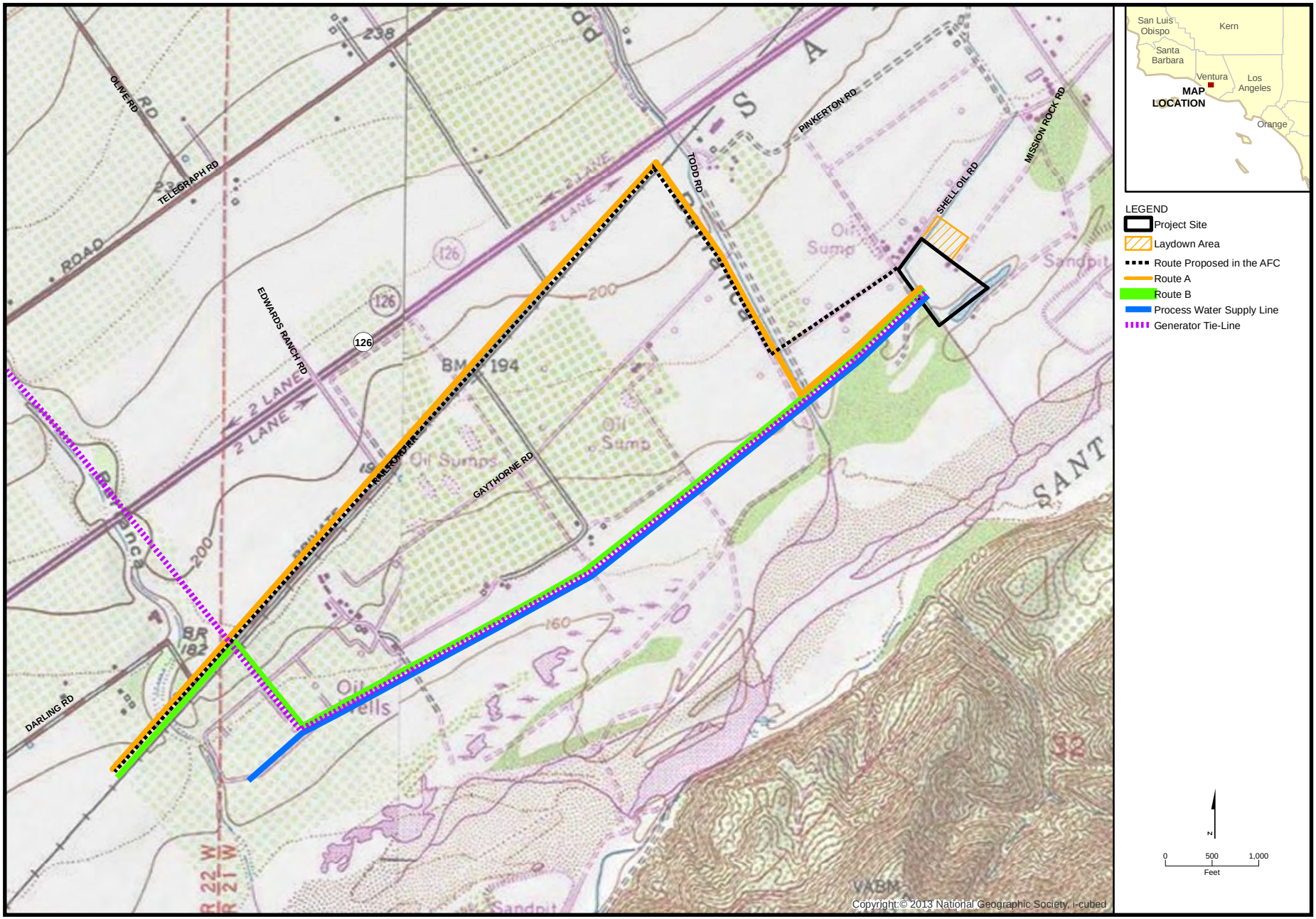
Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite (gallons, lbs, cu ft)	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Aqueous NH_3 (19.5 percent NH_3 by weight)	Aqueous NH_3	7664-41-7	10,200 gallons[g]	100 lbs	526 lbs	500 lbs	500 lbs	No
R134A	1-1-1-2-Tetrafluoroethane	811-97-2	26,960 gallons	e	e	e	e	No

Table 5.5-2 Chemical Inventory, Description of Hazardous Materials Stored Onsite, and Reportable Quantities

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite (gallons, lbs, cu ft)	CERCLA SARA RQ[a]	RQ of Material as Used Onsite[b]	EHS TPQ[c]	Regulated Substance TQ[d]	Prop 65
Cleaning chemicals/detergents	Various	None	3,000 gallons	[e]	[e]	[e]	[e]	No
Diesel No. 2	Diesel No. 2	68476-34-6	200 gallons	[e]	[e]	[e]	[e]	No
Hydraulic oil	Oil	None	150 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Laboratory reagents	Various	Various	10 gallons	[e]	[e]	[e]	[e]	No
Lubrication oil	Oil	None	400 gallons	42 gallons[f]	42 gallons[f]			No
Mineral insulating oil	Oil	8012-95-1	28,800 gallons	42 gallons[f]	42 gallons[f]			No
Sodium bisulfite	Sodium bisulfite	7631-90-5	500 gallons	5,000 lbs	5,000 lbs	[e]	[e]	No
Acetylene	Acetylene	47-86-2	185 lbs	[e]	[e]	[e]	[e]	No
Oxygen	Oxygen	7782-44-7	250 lbs	[e]	[e]	[e]	[e]	No
Propane	Propane	74-98-6	300 lbs	[e]	[e]	[e]	[e]	No
EPA Protocol gases	Various	Various	25 lbs	[e]	[e]	[e]	[e]	No
Cleaning chemicals	Various	Various	Varies (less than25 Gallons Liquids or 100 lbs Solids for each chemical)	[e]				
Lead-Acid Battery	Lead-Acid Battery	Various	12,000 lbs	1,000				
Lithium Ion Batteries	Lithium Ion Batteries	96-49-1 105-58-8	252 tons	[e]				
CO_2	CO_2	53569-62-3	6000 cu ft					

HAZARDOUS MATERIALS MANAGEMENT - FIGURE 1

Mission Rock Energy Center - Natural Gas Pipeline Routes



HAZARDOUS MATERIALS MANAGEMENT

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHill Figure DR132-1 Natural Gas Pipeline Routes

LAND USE

Lisa Worrall

SUMMARY OF CONCLUSIONS

The proposed Mission Rock Energy Center (Mission Rock or project) could be consistent with the applicable laws, ordinances, regulations, and standards (LORS) pertaining to land use planning, and may not cause a significant impact under the California Environmental Quality Act (CEQA). However, until the air quality impacts are fully mitigated, the project's consistency with the applicable standards in the Ventura County Non Coastal Zoning Code is **indeterminate**.

The project would convert a minimal amount of farmland and would not convert any forest land. The project would not create a physical division of an established community, would not conflict with any applicable habitat conservation plan, or natural community conservation plan. The project may 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 once air quality impacts are fully mitigated. The project's minimal agricultural conversion would result in a negligible incremental contribution to a cumulative impact.

Staff has not identified any significant adverse direct or cumulative land use impacts resulting from the construction or operation of the proposed project. However, as air quality impacts are not fully mitigated, there may be disproportionate impacts to the environmental justice population (represented in **Environmental Justice Figure 1, Figure 2,** and **Table 3**), and thus are **indeterminate**. Once this outstanding item is resolved, there would likely be no land use environmental justice impacts related to this project and no minority or low-income populations would be significantly or adversely impacted.

INTRODUCTION

This land use analysis addresses the project's consistency with applicable Ventura County LORS; and potential project-related direct, indirect, and cumulative land use effects, including the project's compatibility with existing or reasonably foreseeable[1] land uses.

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 the "Compliance with LORS" subsection and in **Land Use Table 5**.

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. (Cal. Code Regs., tit.14, section 15130(b)(2)).

Land Use Table 1
Applicable Laws, Ordinances, Regulations, and Standards (LORS)

APPLICABLE LORS	DESCRIPTION
LOCAL	
Ventura County General Plan	The Ventura County General Plan was adopted on May 24, 1988 and is organized into statements of Goals, Objectives, Policies, and Implementation Programs with four chapters; Resources, Hazards, Land Use, and Public Facilities and Services. The planning horizon for this General Plan is the year 2020.
Ventura County Non Coastal Zoning Ordinance	Includes comprehensive zoning regulations for the unincorporated area of the County of Ventura, excluding the Coastal Zone, adopted to protect and promote the public health, safety and general welfare; to provide the environmental, economic and social advantages which result from an orderly, planned use of resources; to establish the most beneficial and convenient relationships among land uses and to implement Ventura County's General Plan.
Ventura-Santa Paula Greenbelt	Voluntary agreement between the Board of Supervisors and one or more city councils regarding development of agricultural and/or open space areas beyond city limits. Greenbelts reassure property owners within these areas that lands will not be prematurely converted to agriculturally incompatible uses.

SETTING

The land use study area for Mission Rock is within a 1-mile radius of the project site and within 0.25-mile of the related linear project elements.

PROJECT SITE

The Mission Rock site is located at 1025 Mission Rock Road in unincorporated Ventura County, approximately 2 miles west of the city of Santa Paula. The project would be located on a 9.79-acre parcel in an industrial park that is currently paved and being used for recreational vehicle and boat storage. The Ventura County Assessor's Identification Number for the Mission Rock site is 090-0-190-165 (CAL 2015a).

Mission Rock would be a natural gas-fired, simple-cycle power plant with five combustion turbine generators (CTGs) offering a nominal generating capacity of 275 megawatts (MW). Additionally, Mission Rock would house 20 on-site lithium-ion battery units to store electricity, providing an additional 25 MW of nominal capacity for up to four hours.

The main access to the Mission Rock site would be via State Route (SR) 126 through the South Briggs Road exit. Local access from South Briggs Road would continue onto South Pinkerton Road, to Mission Rock Road then to the project site. A secondary emergency access is proposed on the northwest boundary of the project site off Shell Road. Access to Shell Road would be from Mission Rock Road.

TRANSMISSION LINES AND LINEARS

The following project elements are required new infrastructure needed to serve the project and connect it to the electrical grid. These project elements would be constructed entirely within unincorporated Ventura County.

Transmission Line

A new 6.6-mile, 230-kilovolt (kV) electric transmission line would be constructed, connecting the project site to the Southern California Edison (SCE) Santa Clara substation (CAL 2015a, pg. 1-2). Thirty-six new transmission line structures (two H-frames and 34 monopoles) of varying heights ranging from 79.9-feet to 200-feet above ground level would be installed (CH2M 2016d, pg. 11 -12 and Table 118-1). The transmission line would be installed in new right-of-way and in certain parts would parallel but not use existing transmission line right-of-way. The new right-of-way would be 75-feet wide (37.5-feet either side of the centerline) (CH2M 2016d, pg. 12). Transmission structures would be erected by cranes except when they cannot be safely used (monopoles # 22 to 38). In these locations the foundations, poles, and conductor would be installed by helicopter. All monopoles are either at the edge of a road or very near an existing road that workers can access on foot for surveying, for minor vegetation clearance (bush cutting), and for pole installation (CH2M 2016d, pg. 13). Ground disturbance for construction would generally be 50-feet by 50-feet, or less with excavation to 30-feet. Several tall dead-end monopoles would require excavation to 60 feet for each pole. A total of approximately 7.56 acres would temporarily be disturbed due to installation of the transmission line (CH2M 2016d, Table DR123-1, pg. 14). Approximately 0.02 acres would be permanently disturbed due to the transmission structures. Also, periodic tree trimming in a 2.8-acre area would occur during regular maintenance of the transmission line.

Natural Gas Pipeline

Natural gas would be delivered to Mission Rock via a tap from the existing Southern California Gas Company (SoCalGas) natural gas Lines 404 and 406 via either a 2.58-mile long pipeline (Route A) or 2.14-mile long pipeline (Route B).

For Route A, the pipeline route would extend southwest from the Mission Rock site parallel with the transmission and wastewater supply lines until it crosses under Todd Barranca. The pipeline would then turn north and continue along the western edge of Todd Barranca until it intersects with the Ventura County Transportation Commission Santa Paula Branch Line right-of-way (ROW) (CEC 2017f). The pipeline would then continue along the railroad ROW southwest to the interconnection point with SoCalGas Lines 404/406.

With Route B, the natural gas pipeline would also enter the project site in the same right-of-way as the recycled water pipeline and transmission line, instead of following Shell Road to Todd Barranca. Where the transmission line turns north and departs from the recycled water pipeline, Route B would also turn north, following the generator tie-line route as far as the railroad right-of-way. Route B would then turn to the west-southwest along the railroad right-of-way to the point of interconnection with SoCalGas lines 404/406 (CAL 2017j).

The natural gas pipeline would be 16 inches in diameter. An approximately 80-foot by 100-foot area on the perimeter of the project site is necessary to house a meter set assembly (gas metering station connecting the gas line to the project). It is anticipated that SoCalGas would construct, own, and operate the new pipeline (CAL 2015a, pg. 4-1).

Recycled-Water Pipeline

A new 1.7-mile, 4-inch recycled water pipeline would be constructed, connecting the project site to an existing Limoneira Company treated recycled-water pipeline (CH2M 2016d, pg. 21). The pipeline would be installed in a 30-foot right-of-way with a minimum cover of 36 inches of soil.

CONSTRUCTION LAYDOWN AND PARKING AREAS

Project site

Temporary construction laydown and parking facilities for the project site would be located on the adjacent parcel to the north of the Mission Rock site. According to the Application for Certification (AFC), approximately 2.89 acres would be used for construction laydown and parking. No on-street parking is anticipated (CAL 2015a, pg. 1-2 and 5.12-17).

Transmission Line and Other Linears

An approximately 2.75-acre area within the transmission right-of-way plus the pull and tensioning sites would be used as a staging area for the transmission lines.

Construction laydown and staging along the natural gas pipeline route is estimated to be in a 50-foot wide right-of-way area along the 2.4-mile route. Access routes to the natural gas line would be via farm roads and fields with none outside of the natural gas pipeline right-of-way.

Construction laydown and staging along the recycled water pipeline route is estimated along the 30-foot-wide right-of-way where excavated soil would be piled on one side of the trench and used for backfilling the pipeline. Boring or directional drilling would be used to cross beneath Todd and Ellsworth barrancas. The pipe would be laid out on wooden skids beside the open trench. After laying the pipe, the trench would be backfilled, compacted, graded, and contoured to return the surface to its original grade or level. Cleanup includes restoring the ground surface by removing any construction debris, grading to the original grade and contour, and re-vegetating or repairing where required. Approximately 8.25 acres of land would temporarily be disturbed for installation and staging of the pipeline (1.7 miles by 30-feet) (CH2M 2016d, pg. 22). Access to the pipeline route would be through existing farm roads, farm fields and the recycled water pipeline right-of-way.

SURROUNDING AREA

Adjacent and nearby land uses around the Mission Rock site include an asphalt concrete plant and recycling facility, an automotive dismantling facility, vehicle storage for crushed cars, auto repair and salvage yards, and agricultural production. While the land uses in the immediate vicinity of the Mission Rock site are industrial, there are a few residences in this industrial area. The closest residence to the project site is approximately 0.2-mile east of the project site. The Ventura County Todd Road Jail is approximately 0.25-mile west of the project site. General Plan land use designations immediately adjacent to and nearby the proposed Mission Rock site include Agricultural and Open Space to the north, west and south, the Santa Clara River to the south, and

Existing Community (consisting of an industrial park) and Open Space to the east. Adjacent land uses around the transmission line and linears include agricultural, agricultural processing, industrial, open space/grazing, the Ventura County Todd Road Jail, the Santa Clara substation, and conservation land. General Plan land use designations immediately adjacent to and nearby the transmission line and linears include Agricultural, Open Space, and Existing Community.

GENERAL PLAN LAND USE AND ZONING DESIGNATIONS

AFC Figure 5.6-1 presents the existing land uses in the land use project study area. AFC Figure 5.6-4 (General Plan Land Use Designations Map) and AFC Figure 5.6-5 (Unincorporated Ventura County Zoning Designation Map) illustrate the land use and zoning designations of the proposed power plant site. In addition, these figures illustrate the land use and zoning designations of lands within a one-mile buffer of the proposed power plant site. Staff verified the information in the land use figures presented in the AFC. When the location of transmission pole number 18 was moved slightly and when two alternative natural gas pipeline routes were identified, staff reviewed the land use designation and zoning. The land use and zoning designations of the areas surrounding the proposed project are presented to help illustrate Ventura County's existing and planned pattern of land use development in the project area.

Project Site

The Mission Rock site is designated by the Ventura County General Plan as Existing Community and zoned General Industrial (M3) by the Ventura County Non Coastal Zoning Code. The project site is also located within the Ventura-Santa Paula Greenbelt; however, the greenbelt only applies to agricultural and open space land.

The Ventura County General Plan states the Existing Community designation "may include uses, densities, building intensities, and zoning designations which are normally limited to Urban designated areas but do not qualify as urban centers (Ventura Co 2015b, pg. 56).

The M3 zoning district was established to "provide suitable areas for the development of a broad range of general manufacturing, processing and fabrication activities. The M3 Zone is intended for uses that do not require highly restrictive performance standards on the part of adjoining uses. The M3 zone, as the heaviest manufacturing zone, is intended to provide for uses involving the kinds of processes, activities, and elements which are specifically excluded from the M1 Zone (Ventura Co 2016a, pg. 4-4).

Transmission Line

The electric transmission line would be located within the Agricultural and Open Space general plan land use designations and Open Space (OS) and Agricultural Exclusive (AE) zones. The transmission line would cross AG-10-year and AG-20-year Land Conservation Act (LCA)-local Williamson Act contract land. The new transmission line would cross land designated by the Farmland Mapping and Monitoring Program (FMMP) as Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Grazing land, other land, and urban and built-up land. The transmission line would be located within the Ventura-Santa Paula Greenbelt. A short length of the transmission

line would be constructed on land in the Mineral Resources Protection (MRP) overlay zone.

Agricultural designated land is applied to irrigated lands suitable for crop cultivation and raising livestock.

Open Space designated land is applied to land that is essentially unimproved and devoted to an open-space use and is designated on a local, regional or state open-space plan. Land zoned OS provides for the preservation of natural resources, the managed production of resources, outdoor recreation, public health and safety, formation and continuation of cohesive communities, promotion of efficient municipal services, support the mission of military installations, and protection of Native American places, features, and objects.

Land zoned AE is for the preservation and protection of commercial agricultural lands as a limited and irreplaceable resource, preservation and maintenance of agriculture as a major industry in Ventura County, and to protect these areas from the encroachment of nonrelated uses, which by their nature would have detrimental effects upon the agricultural industry.

Land enrolled in 10-year and 20-year LCA contracts restrict contracted land to agricultural or open space uses for either 10 or 20 years. In exchange for the land use restrictions, the contracting landowner receives preferential property tax treatment. The LCA program allows compatible uses within agricultural contracts that do not hinder or compromise the existing or potential agricultural productivity of agricultural land.

FMMP's study area is contiguous with modern soil surveys developed by the US Department of Agriculture (USDA). A classification system that combines technical soil ratings and current land use is the basis for the Important Farmland Maps of these lands (CDOC 2016).

Land designated as Prime Farmland is farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Land designated as Farmland of Statewide Importance is farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Land designated as Unique Farmland is farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Land designated as Grazing land is land on which the existing vegetation is suited to the grazing of livestock.

Land designated as urban and built-up land is land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

Land designated as other land is land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

Natural Gas Pipeline

Both Routes A and B of the natural gas pipeline would be located within Open Space, Agricultural, and Existing Community general plan land use designations. Route A would be located within land zoned OS-80 ac, OS-80 ac/Mineral Resource Protection (MRP) overlay, AE-40 ac, and M3. Route B would be located within land zoned OS-80 ac, OS-80 ac/MRP, AE-40 ac, AE-40 ac/MRP, and M3. Both Routes A and B cross AG-10-year LCA land. Route A would cross land designated by FMMP as Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and urban and built-up land. Route B crosses land designated by FMMP as Prime Farmland and Unique Farmland, other land, and urban and built-up land. Both Routes A and B would be located within the Ventura-Santa Paula Greenbelt.

Recycled-Water Pipeline

The recycled-water pipeline would be located within Open Space, Agricultural, and Existing Community general plan land use designations and OS-80 ac, OS-80 ac/MRP, AE-40 ac, AE-40 ac/MRP, and M3 zones. The recycled-water line would cross AG-10-year LCA land. The new recycled-water line would cross land designated by FMMP as Prime Farmland and urban and built-up land. The recycled-water pipeline would be located within the Ventura-Santa Paula Greenbelt.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Energy Commission staff has analyzed the information provided in the AFC and by Ventura County, and has acquired information from other sources to determine the consistency of Mission Rock with applicable land use LORS and the proposed project's potential to have significant adverse land use-related impacts.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document are based on Appendix G of the CEQA Guidelines and 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.
  - Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to non-agricultural use.[2]
  - Conflict with existing zoning for agricultural use, or a Williamson Act contract.
  - Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code, section 12220(g)), timberland (as defined by Public Resources Code, section 4526), or timberland zoned Timberland Production (as defined by Government Code, section 51104(g)).
  - Loss of forest land or conversion of forest land to non-forest use.
  - Changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use[3] or conversion of forest land to non-forest use.
- Physical division of an established community.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Incremental impacts that, although individually limited, are cumulatively considerable when viewed in connection with other project-related effects or the effects of past projects, other current projects, and probable future projects.[4]

Ventura County Initial Study Assessment Guidelines

The Ventura County Resource Management Agency Planning Division provided Energy Commission staff the *Ventura County Initial Study Assessment Guidelines* (April 26, 2011) to use when analyzing the proposed project's potential impacts in accordance with Ventura County's adopted California Environmental Quality Act (CEQA) environmental significance thresholds (VCPD 2016a). Therefore, in addition to Appendix G CEQA Guidelines, staff used the *Ventura County Initial Study Assessment*

2 FMMP defines "land committed to non-agricultural use" as land that is permanently committed by local elected officials to non-agricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors.

3 A non-agricultural use in this context refers to land where agriculture (the production of food and fiber) does not constitute a substantial commercial use.

4 Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects and can result from individually minor, but collectively significant actions taking place over a period of time (CEQA Guidelines §15355).

Guidelines in preparing this analysis. The guidelines are shown in italics when discussed below.

DIRECT/INDIRECT IMPACTS AND MITIGATION

This section discusses the applicable potential project impacts and associated methods and thresholds of significance referenced above.

AGRICULTURE AND FORESTRY RESOURCES

According to the California Department of Conservation's 2015 California Farmland Conversion Report, Ventura County defines farmland of local importance as land designated by FMMP as Prime or Statewide Importance that are not irrigated, and soils growing dryland crops--beans, grain, dryland walnuts, or dryland apricots (CDOC 2015, Appendix E pg. 97 and102).

Ventura County Initial Study Assessment Guidelines

Agriculture Resources- Soils-

Threshold of Significance Criteria:

Any project that would result in the direct and/or indirect loss of soils designated Prime, Statewide Importance, Unique or Local Importance will have an impact.

Any project that would result in the direct and/or indirect loss of agricultural soils meeting or exceeding the following criteria will be considered as having a significant project impact:

Land Use Table 2
Ventura County's Threshold of Significance Criteria of Loss of Farmland

General Plan Land Use Designation	***Important Farmland Inventory Classification***	***Acres Lost***
Agricultural:	*Prime/Statewide:*	*5 ac.*
	Unique:	*10 ac.*
	Local:	*15 ac.*
Open Space/Rural:	*Prime/Statewide:*	*10 ac.*
	Unique:	*15 ac.*
	Local:	*20 ac.*
All Others:	*Prime/Statewide:*	*20 ac.*
	Unique:	*30 ac.*
	Local:	*40 ac.*

The transmission line and recycled-water and natural gas pipelines would be installed on land designated by the General Plan as agricultural and open space and identified by the FMMP as Prime, Unique, and Statewide Importance farmland. The applicant estimates a temporary construction area, 50-feet by 50-feet around each transmission pole. The permanent impact area would be mostly 5-feet in diameter and with some 6-feet in diameter depending upon the pole type. There would be a total of 36 transmission poles. The first pole and last pole would be H frame structures and the remainders would be monopoles. The two H frame structures would be installed on urban and built-up land. **Land Use Table 3** presents the estimated temporary and permanent impact area for the transmission poles based on land use designation and

FMMP designation. As the table shows, none of the acres lost due to the transmission poles meet the Ventura County's significance threshold identified in **Land Use Table 2**.

Land Use Table 3
Permanent Impacts to Farmland

General Plan Land Use Designation	Important Farmland Inventory Classification	Acres Lost	Square Feet Lost
Agricultural	Prime/Statewide	0.01	243.9
	Unique	0.00	126.3
	Local	0.00	0.0
Open Space/Rural	Prime/Statewide	0.00	19.6
	Unique	0.00	0.0
	Local	0.00	0.0
Source: CAL2015a			

Any project that would result in the direct and/or indirect loss of agricultural soils is considered as having a contribution to a significant cumulative impact. The cumulative loss of agricultural soils was discussed in the Final Environmental Impact Report for the 1998 County General Plan.

If the project would result in a significant project or cumulative impact, the project description (including site plan) shall be forwarded to the Agricultural Department for review and comment as to possible mitigation measures.

If a project would result in the loss of an agricultural tree row which would increase the potential for wind erosion, or would result in the loss of agricultural soils due to increased water erosion, the Agricultural Department shall be consulted to determine significance and possible mitigation measures, if necessary.

Construction of the transmission line poles across the valley floor would require excavation for approximately 17 poles generally to a depth of 30-feet for most poles and excavation to a depth of 60-feet for several of the tall dead-end poles. Poles in the hilly areas would be installed with vibratory caisson methods into the soil. The poles installed across the valley floor would be backfilled with either crushed limestone or concrete (CH2M 2016d). The soil that has been excavated would either be removed from the site or perhaps, if desired or requested by the property owner, could be given to the property owner for distribution on the rest of their property. Trees would need to be trimmed in several places along the transmission line route to allow safe clearance for the transmission line conductors. There is a windrow on the adjacent farm along the southwest Mission Rock property boundary. The eucalyptus trees that form the windrow within would be trimmed to ensure there is a ten-foot clearance around the transmission conductor consistent with standard utility practices and regulations (CH2M 2017j). On-going pruning would occur during project operations to maintain the ten10-foot safe clearance between trees and the transmission line (conductor and line sag).

Loss of agricultural soil would be minimized with the implementation of standard storm water measures. During construction, approximately 10 percent of the transmission line corridor would be exposed to erosion at any given time as construction of the line would occur in phases. The amount of soil that could be exposed to erosion during construction is approximately 0.025 acres, which is the total area estimated for grading a

50 by 50 foot temporary construction area for each transmission pole. Refer to the **Soil and Water Resources** section of this staff assessment for more information about storm water control measures during construction. After construction, permanent storm water control measures would minimize erosion by stabilizing the soil. Because soil-disturbing activities during operation of the transmission line (e.g. maintenance of the transmission line) would be infrequent, the potential for ongoing soil erosion would be minimal. See the **Soil and Water Resources** section of this staff assessment for more information about potential soil loss. Based on the Ventura County Initial Study Assessment thresholds for loss of agricultural soils, the project would have **a less than significant** impact.

Agricultural Resources- Land Use Incompatibility-

Threshold of Significance Criteria:

Any land use or project that is not defined as Agriculture or Agricultural Operations in the zoning ordinances will be evaluated for effects on adjacent classified farmland. Any project that is closer than the distances set forth below will be considered to have a potentially significant environmental effect on agricultural resources, unless justification exists for a waiver or deviation from these distances.

Land Use Table 4
Ventura County's Threshold of Significance Criteria for Land Use Incompatibility

Evaluation for All Non-Agriculture or Non-Agricultural Operations Project	
	Distance from Non-Agricultural Structure or Use and Common Boundary Line Adjacent to Classified Farmland
Without vegetative screening	*300 feet*
With vegetative screening	*150 feet*
New K-12 school	*1,320 feet*

Projects that are consistent with the General Plan and do not have project-specific effects will result in a determination of a less-than-significant environmental effects.

The Mission Rock project site is designated as Existing Community and is within an existing industrial area. The project would be consistent with the General Plan, see the "Ventura County General Plan" subsection below. The project would not result in unmitigated significant environmental impacts on adjacent classified farmland with the implementation of staff's recommended conditions of certification. Therefore, the project would result in less than significant environmental impacts on adjacent classified farmland.

Would the project convert Farmland to non-agricultural use?

The proposed Mission Rock project site and construction parking and laydown area do not contain, and would therefore not convert, any farmland with FMMP designations of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance to non-agricultural use.

The new transmission line would cross land designated by FMMP as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing land, other land, and urban and built up land. As discussed in the "Setting" subsection, the transmission line

would be supported by 36 new towers along the 6.6-mile length. Transmission towers would have a diameter of 5-feet and some towers would have a diameter of 6-feet. Installation of the towers would result in a permanent conversion of approximately 810.5 square feet (0.02 acres) of farmland. This is a negligible conversion.

The new gas line along Route A would cross land designated by FMMP as Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. The new gas line along Route B would cross land designated by FMMP as Prime Farmland and Unique Farmland. No farmland would be converted to non-agricultural use as the pipelines would be buried underground. After installation of the pipeline, the land would be restored to the original grade and re-vegetated as necessary.

The new recycled-water line crosses land designated by FMMP as Prime Farmland. No farmland would be converted to non-agricultural use as the pipelines would be buried underground. After installation of the pipeline, the land would be restored to the original grade and re-vegetated as necessary.

The transmission towers would convert a negligible amount of farmland to non-agricultural use. The project would have a **less than significant impact** under this criterion.

Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

The proposed Mission Rock project is not located on land zoned for agricultural use or on land that is under a Williamson Act contract, so would not conflict with land zoned for agricultural or under a Williamson Act contract.

The transmission line crosses land zoned for agricultural use; specifically Agricultural Exclusive. The transmission line crosses AG-10-year and AG-20-year Land Conservation Act (LCA) land. Twenty one transmission poles would be installed on AG-10-year land and three poles would be installed on AG-20-year land taking up 455.1 square feet (0.01 acres) of AG-10-year land and 67.5 square feet (0.00 acres) of AG-20-year land. Both the new recycled-water pipeline and natural gas pipeline cross land zoned for agricultural use, specifically Agricultural Exclusive and land currently under a 10-year LCA.

The California LCA, 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, Government Code, sections 51200-51297.4). Ventura County's Local Conservation Act is the county-specific LCA. Government Code, section 51238(a)(1) determines that the erection, construction, alteration, or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities are compatible uses within any agricultural preserve.

Ventura County Land Conservation Act Guidelines requirements for LCA contracts allow "compatible uses" are those which are permitted, or conditionally permitted by the Ventura County Zoning Ordinance in the AE-40 ac or Coastal Agricultural (CA) zones,

in accordance with Government Code, sections 51231, 51238, and 51238.1 (Ventura Co 2015, pg. 8).

Construction of the transmission line and recycled-water and natural gas pipelines would be consistent with existing agricultural zoning and Williamson act contracted land.

The project would have a **less than significant** impact under this criterion.

Would the project conflict with existing zoning for, or cause rezoning of forest land[5], timberland[6], or timberland zoned Timberland Production[7]?

There is no forest land or timberland in the project area. The proposed project site is not zoned for forest land, timberland, or for timberland production. The transmission lines, natural gas and recycled-water pipelines do not cross land zoned for forest land, timberland, or for timberland production. Therefore, there would be no project conflict with or cause for rezoning such lands. The project would have **no impact** under this criterion.

Would the project result in the loss of forest land or conversion of forest land to non-forest use?

There is no forest land or timberland in the project area. Therefore, there would be no loss of forest land or conversion of forest land to non-forest use. The project would have **no impact** under this criterion.

Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

The transmission line and natural gas and recycled-water pipelines would be installed on agricultural-zoned land and Mission Rock would be constructed on land adjacent to agricultural-zoned land. Construction of the transmission line, natural gas and recycled-water pipelines, and Mission Rock would not result in significant impacts that would extend beyond the property boundary on which they are proposed, that would result in the conversion of farmland to non-farmland uses. Refer to the previous discussion under the “Would the project convert Farmland to non-agricultural use?” subsection for more information. Also, refer to the “Article 11” subsection for a discussion of the project’s consistency with additional standards for Agricultural Exclusive- zoned land.

There is no forest land or timberland in the project area. Therefore, there would be no loss of forest land or conversion of forest land to non-forest use. The project would have a **less than significant** impact under this criterion.

5 As defined in Pub. Resources Code, §12220(g).

6 As defined by Pub. Resources Code, §4526

7 As defined by Gov. Code, §51104(g)

LAND USE AND PLANNING

Would the project physically divide an established community?

Ventura County Initial Study Assessment Guidelines

Community Character-

A number of communities have been designated as "Existing Communities" and consist of existing urban residential, commercial, or industrial enclaves located outside of Urban areas.

Threshold of Significance Criteria:

A project that is inconsistent with any of the policies or development standards relating to community character of the Ventura County General Plan Goals, Policies and Programs or applicable Area Plan (above), is regarded as having a potentially significant environmental impact; and/or

A project has the potential to have a significant impact on community character, if it either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable probable future projects would introduce physical development that is incompatible with existing land uses, architectural form or style, site design/layout, or density/parcel sizes within the community in which the project site is located.

The proposed Mission Rock site and construction parking and laydown area would be located within an industrial park on land designated as Existing Community. There are a few residences within a 1- and 3-mile radius of the project site. There are three residences in proximity to the project site. The closest residence is approximately 941 feet east of project site and is a permitted non-conforming land use with an employee in an industrial zoned property. The second and third residences are approximately 1,125 feet east of the site. The second residence is a non-conforming land use as a principal residential dwelling on an industrial zoned property. The third residence is a conforming land use as a principal residential dwelling (CEC 2016i). Other land uses in the community include an asphalt and concrete processing facility, automobile dismantling facility, and vehicle storage and repair yards. Mission Rock would not be incompatible with the existing land uses within the community in which it is proposed.

Access to the proposed project would be via Mission Rock Road, on the southeast side of Shell Road. The project site is also located approximately one mile south of SR-126 (Santa Paula Freeway), which is a major transportation corridor. There would not be a need to relocate any residences as a result of the project. Therefore, Mission Rock would not physically divide any community within the study 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 transmission lines would not cross an established community and the natural gas and recycled-water pipelines would be installed underground. The project would have **no impact** under this criterion.

Would the project conflict with any applicable habitat or natural community conservation plan?

The Mission Rock site, construction parking and laydown area, and associated transmission line and linears are not located within any Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) (CDFW 2015). The project would have **no impact** under this criterion.

Would the project conflict with any applicable land use plan, policy or regulation?

Energy Commission staff evaluates (California Code Regulations, title 20, section 1744) the information provided by the applicant in the AFC (and any supplemental information), including the 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. When determining LORS compliance, staff is required to give "due deference" to an agency's assessment of whether a proposed project is consistent with LORS under the agency's jurisdiction (Cal. Code Regs., tit. 20, § 1714.5).

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).

Ventura County General Plan

State law requires each county and city to prepare and adopt a comprehensive and long-range general plan for its physical development (Gov. Code, § 65300). The general plan must include elements such as land use, circulation, housing, open-space, conservation, safety, and noise, as identified in state law (Gov. Code, § 65302), to the extent that the topics are locally relevant. The Ventura County General Plan contains (a) Countywide Goals, Policies and Programs containing four chapters (Resources, Hazards, Land Use, and Public Facilities and Services), (b) four Appendices (Resources, Hazards, Land Use, and Public Facilities and Services) which contain background information and data in support of the Countywide Goals, Policies and Programs, and (c) several Area Plans which contain specific goals, policies and programs for specific geographical areas of the county. The planning horizon for this General Plan is the year 2020.

The Ventura County General Plan was adopted on May 24, 1988 and is organized into statements of Goals, Objectives, Policies, and Implementation Programs with four chapters; Resources, Hazards, Land Use, and Public Facilities and Services.

1 Resources

The Resources chapter identifies goals, policies, and programs relating to the preservation, conservation, production, and utilization of resources in Ventura County.

1.2 Mineral Resources

The two principal mineral resources located in Ventura County are petroleum (oil and gas) and aggregate (principally sand and gravel). Other minerals of commercial value within Ventura County are: asphalt, clay, expansible shale, gypsum, limestone, and phosphate.

As noted previously, the transmission line and recycled-water and natural gas pipelines are located within a Mineral Resource Area (mineral protection overlay zone).

> 8. Discretionary development within a Mineral Resource Area shall be subject to the provisions of the Mineral Resources Protection Overlay Zone, and is prohibited if the use will significantly hamper or preclude access to or the extraction of mineral resources.

Thirty-six transmission poles, most 5 and some 6 feet in diameter, would be installed to serve the project. The recycled-water pipeline would extend 1.7-miles and measure 4 inches in diameter. The natural gas pipeline would extend up to 2.4-miles and measure 16 inches in diameter. Because the linears would not be extensive in size, the construction of the transmission line and recycled-water and natural gas pipelines would not hamper or preclude access or extraction of mineral resources. The project would be **consistent** with this policy.

1.6 Farmland Resources

The high productivity of agricultural land in Ventura County is made possible by the County's abundance of the natural resources required for agricultural production; primarily soils, water, climate and topography.

The transmission line crosses land designated as Agricultural, Open Space and Rural.

> 1. Discretionary development on land designated as Agricultural and identified as Prime Farmland or Farmland of Statewide Importance shall be planned and designed to remove as little land as possible from potential agricultural production and to minimize impacts on topsoil.

The transmission line poles measure approximately 5 feet in diameter for the angle, H-frame, and vertical type, and 6 feet in diameter for the dead-end type. The 36 transmission line poles would remove a negligible amount of agricultural land from production. The natural gas and recycled-water pipelines would be installed at a depth that would allow agricultural activities to continue. Standard storm water measures required during construction would minimize any soil loss. Refer to the **Soil and Water Resources** for more information about storm water measures. The project would be **consistent** with this policy.

6. Discretionary development adjacent to Agricultural-designated lands shall not conflict with agricultural use of those lands.

The power plant and battery facility are proposed on land adjacent to land designated as agricultural (northwest project boundary). The transmission lines and recycled-water and natural gas pipelines (associated linears) are proposed on land adjacent to land designated as agricultural (surrounding the linears). The proposed pipelines would not conflict with the agricultural use of these surrounding lands, as they would have negligible temporary and permanent impacts on the property on which they are proposed, with no impact on adjacent agricultural properties as the pipelines would be buried with a 36-inch cover that would allow continued agricultural use of the land. The General Plan land use policy 3.1.2.3 (below) states that any land use is consistent with the General Plan land use designations if it is permitted with the zoning designation. Transmission lines are compatible with agricultural zoned land with a conditional use permit and thus would be compatible with the agricultural land use designation. See discussion under the "Article 11" subsection for the transmission line's compatibility with the conditional use permit. The project would be **consistent** with this policy.

3 Land Use

The Land Use chapter sets goals, policies, and programs to guide future growth and development in the unincorporated areas of Ventura County.

3.1.2 Policies

3. Consistency of Land Use: Any land use shall be deemed consistent with the General Plan if it is permitted under a zoning designation which is consistent with Policy Number 2 (zoning shall be consistent with the General Land Use Maps – Figure 3.1 -and the Zoning Consistency Matrix – Figures 3.2a and b), and if the land use does not conflict with any other policy of the County General Plan.

As discussed above, the power plant and battery facility and associated linears would be compatible with the zoning designation on which they are proposed with a conditional use permit. See discussion under the "Article 11" subsection for the transmission line's compatibility with the conditional use permit. The project would be **consistent** with this policy.

5. Building Intensity and Population Density: Except for Affordable/Elderly Housing developments that are eligible for density bonuses as specified in Article 16 of the Non-Coastal Zoning Ordinance, and Cultural Heritage Sites that are eligible for deviation as specified in the Non-Coastal Ordinance, the following building intensity and population density standards apply to the unincorporated areas of the County:

- For Existing Communities (as defined and discussed in Section 3.2), the building intensity and population density standards shall be as specified on the tables which accompany each Existing Community map contained in this Chapter commencing with Figure 3.6 (showing the location of Existing Communities throughout the county).

General Plan Figure 3.16a maps the Mission Rock Existing Community and Figure 3.16b presents the building intensity and population density standards for this Existing Community. The maximum building coverage for this Existing Community is limited to 40 percent lot coverage. The projected floor area limit for this Existing Community is 258,000 square feet. The average employees per 1,000 square feet limit for this Existing Community is two. The average employees per acre limit for this Existing Community is 5.66.

The General Plan glossary defines building coverage as the ratio of the area of land covered by buildings to total lot area, expressed as percent coverage. For purposes of this definition, "building" is any structure having a roof supported by columns or walls, and "building area" is the area included within the surrounding exterior walls or columns of a building, exclusive of courts.

The project lot is 9.79 acres and approximately 0.11 acres of the lot would be developed, which is 1.12 percent of the lot, within the lot coverage standard. The total floor area of the buildings proposed for the project is 4,480 square feet, within the projected floor area limit. Based on the average number of two employees per 1,000 square feet of building floor area, the project would be limited to an average of 9 employees (CH2M 2016g, Table DR65-1, pgs. 8-9). At an average of 8 employees during the week and 2 during the weekends, the project is within the employee to square foot limits (CEC2 017d). Given the lot size and average number of employees, the project would employ 0.8 employees per acre, within the employee per acre limit. The project would be **consistent** with this policy.

3.2 Land Use Designations

Existing Community- Identifies existing urban, residential, commercial, or industrial enclaves outside of urban designated areas. Existing communities may include uses, densities, building intensities, and zoning designations which are normally limited to Urban designated areas but do not qualify as urban centers.

The power plant and battery facility are proposed on land designated as existing community. This industrial use would be **consistent** with this land use designation.

Agricultural- Applied to irrigated lands suitable for crop cultivation and raising livestock.

The transmission line and recycled-water and natural gas pipelines would cross land designated as Agricultural. The two pipelines would be buried with a 36-inch cover that would allow continued agricultural use of the land. The transmission lines are compatible with agricultural-zoned land with a conditional use permit and are therefore compatible with this land use designation. See discussion under the “Article 11” subsection for more information about the transmission line’s compatibility. The project would be **consistent** with this land use designation.

Open Space- Applied to land that is essentially unimproved and devoted to an open-space use and is designated on a local, regional or state open-space plan. Open-space uses include preservation of natural resources, managed production of resources, outdoor recreation, and public health and safety.

The transmission line and recycled-water and natural gas pipelines would cross land designated as Open Space. The recycled-water and natural gas pipelines would be buried underground so they would not affect open space uses. The transmission line would be installed aboveground but the minimal profile (five feet and six feet pole diameter) would not be a large obstruction on the open space designated land. The project would be **consistent** with this land use designation.

Policies 3.2.2

2. Existing Community

(2) The Existing Community designation may recognize the range of zones present in the area, be they residential, commercial, or industrial, as well as the range of existing population densities and building intensities. The appropriate zoning, population densities, and building intensities shall be those allowed by the adopted Area Plan or, where no Area Plan exists, by the applicable Existing Community Map contained in this Chapter commencing with Figure 3.7.

The power plant and battery facility are proposed on land with this designation and as listed above, industrial development is allowed. The project would be **consistent** with this policy.

4. Agricultural

(3) Agricultural land shall be utilized for the production of food, fiber, and ornamentals; animal husbandry and care; uses accessory to agriculture and limited temporary or public uses which are consistent with agricultural or agriculturally related uses.

The transmission line and recycled-water and natural gas pipelines are proposed on agricultural designated land. The transmission line and pipelines are public utilities and are allowed based on this policy. The project would be **consistent** with this policy.

5. Open Space

(3) Open Space should also include…access to...areas which serve as links between major recreation and open space reservations, including utility easements…

A small portion of the transmission line and recycled-water and natural gas pipelines are proposed on Open Space designated land. Open Space designated land allows utility easements. This project would be **consistent** with this policy.

<u>3.4 Employment and Commerce/Industry</u>

3.4.2 Policies

1. Commercial and industrial development shall be located within cities, existing unincorporated urban centers or designated Existing Communities which provide maximum access to the public and where appropriate public facilities and services can be provided to serve such development.

The Mission Rock power plant and battery facility are proposed on land designated as Existing Community. The project would be **consistent** with this policy.

3. Commercial and industrial developments shall be designated to be generally compact, grouped and consolidated into functional units providing for sufficient off-street parking and loading facilities, maximizing pedestrian and vehicle safety, and minimizing the impacts on land use conflicts and traffic congestion.

Mission Rock would provide sufficient off-street parking on the project site. See discussion under the "Article 8" subsection for parking standards for the project site. The project would be **consistent** with this policy.

6. Industrial development shall be located within city or existing unincorporated area industrial parks that have the necessary public facilities and services to support most industrial development.

Mission Rock is proposed in an existing industrial park. Mission Rock would construct new natural gas pipeline and recycled water pipeline to serve the project, connecting to existing pipelines from service providers. The project would be **consistent** with this policy.

7. Commercial and industrial uses shall be designed and conducted in a manner that is compatible with surrounding land uses such that potential impacts are mitigated to less than significant levels, or, where no feasible mitigation measures are available, a statement of overriding considerations shall be adopted.

The power plant and battery facility would be constructed on an industrial zoned site surrounded by other industrial uses. With the implementation of staff's proposed conditions of certification, potential impacts with surrounding land uses would be mitigated to less than significant levels. Therefore the project would be designed and conducted in a manner that would be compatible with surrounding land uses and the project would be **consistent** with this policy.

4 Public Facilities and Services

The Public Facilities and Services chapter identifies goals, policies, and programs applicable to public facilities and services throughout Ventura County at both a local and regional level.

4.5 Public Utilities

Public utilities, as addressed in this section, include electrical power, natural gas, telephone service, cable television service, and communication equipment including wireless communication facilities.

4.5.2 Policies

1. New gas, electric, cable television and telephone utility transmission lines shall use or parallel existing utility rights-of-way where feasible and avoid scenic areas when not in conflict with the rules and regulations of the California Public Utilities

Commission. When such areas cannot be avoided, transmission lines should be designed and located in a manner to minimize their visual impact.

The new gas line would be buried underground; however the transmission line would be installed above ground. Visual Resources staff concludes that it is not feasible to avoid scenic areas and has recommended Condition of Certification **VIS-2** to address potential visual issues in affected scenic areas. Refer to the **Visual Resources** section of this staff assessment for more information. The project would be **consistent** with this policy.

2. All transmission lines should be located and constructed in a manner which minimizes disruption of natural vegetation and agricultural activities and avoids unnecessary grading of slopes when not in conflict with the rules and regulations of the California Public Utilities Commission.

Every effort to minimize impacts to natural vegetation would be made, according to the applicant. Agricultural activities (particularly row crops) could continue under and around the transmission line. There may be locations along the transmission line route where impacts to natural vegetation cannot be avoided. See discussion under the "Article 7" subsection which describes how alteration, felling, or removing a protected tree is allowed as an exception when necessary for the purpose of protecting the public and maintaining adequate clearance from public utility conduits and facilities. The project would be **consistent** with this policy.

3. Discretionary development shall be conditioned to place utility service lines underground wherever feasible.

The new natural gas pipeline and recycled-water pipeline would be installed underground. The new transmission line would be installed above ground, which is consistent with other existing transmission lines in the Santa Clara River Valley. The project would be **consistent** with this policy.

Conclusion

The project would be consistent with the policies and land use designations of the Ventura County General Plan.

Ventura County Non-Coastal Zoning Code

The Ventura County Zoning Ordinance was enacted on March 18, 1947 and provides comprehensive zoning regulations for the unincorporated area of the County of Ventura, excluding the Coastal Zone. In 1983 the Zoning Ordinance was divided into the Coastal Zoning Ordinance for coastal areas and the Non-Coastal Zoning Ordinance that covers all areas outside the Coastal Zone.

Sec 8104-1 Open Space/Agricultural Zones	
Sec. 8104-1.1 Open Space (OS) Zone.	The purpose of this zone is to provide for the preservation of natural resources, managed production of resources, outdoor recreation, definition of community boundaries and prevent urban sprawl, containment of municipal services and facilities to urban areas to help prevent urban sprawl, land that supports the mission of military installations by providing buffer zones to military activities, and protection of Native American places, features, and objects on essentially unimproved land.
Sec. 8104-1.2 Agricultural Exclusive (AE) Zone.	The purpose of this zone is to provide for the preservation and protection of commercial agricultural lands as a limited and irreplaceable resource, preservation and maintenance of agriculture as a major industry in Ventura County, and to protect these areas from the encroachment of nonrelated uses which, by their nature, would have detrimental effects upon the agricultural industry.

A short length of the transmission line and recycled-water and natural gas pipelines would be constructed on OS zoned land. Transmission lines are allowed on open space zoned land with a Planning Director-approved conditional use permit. Because of the in lieu permitting with an Energy Commission license, staff assesses whether the project would meet the standards for a conditional use permit. See discussion under the "Article 11" subsection for the project's consistency with this zone. The two pipelines would be buried and not interfere with the open space use of the land. The project would be **consistent** with this zone.

The transmission line and recycled-water and natural gas pipelines would be constructed on AE zoned land. Transmission lines are allowed on AE zoned land with a Planning Director-approved conditional use permit. See discussion under the "Article 11" subsection for the project's consistency with this zone. The two pipelines would be buried with a 36-inch cover that would allow continued agricultural use of the land. The project would be **consistent** with this zone.

Sec. 8104-5 Industrial Zone	
Sec. 8104-5.3 General Industrial (M3) Zone.	The purpose of this zone is to provide suitable areas for the development of a broad range of general manufacturing, processing and fabrication activities. The M3 Zone is intended for uses which do not require highly restrictive performance standards on the part of adjoining uses. The M3 Zone, as the heaviest manufacturing zone, is intended to provide for uses involving the kinds of processes, activities and elements which are specifically excluded from the M1 Zone.

The Mission Rock power plant and battery facility are proposed on land zoned General Industrial (M3). Public utility facilities are permitted uses with a Planning Commission-approved conditional use permit and aboveground transmission lines are permitted uses with a Planning Director-approved conditional use permit. See discussion under the "Article 11" subsection for the project's consistency with this zone. The project would be **consistent** with this zone.

Sec. 8104-7.2 Mineral Resources Protection (MRP) Overlay Zone.	The purposes of this zone are; a. to safeguard future access to an important resource, b. to facilitate a long term supply of mineral resources within the County, and c. to minimize land use conflicts.

Overlay zones are superimposed on existing base zones, establishing additional regulations. The MRP overlay zone is on both Agricultural Exclusive and Open Space zoned land along the transmission line route. This overlay zone minimizes land use conflicts, safeguards future access to an important resource, facilitates long term supply on mineral resources within Ventura County, but does not obligate Ventura County to approve use permits for the development of the resource subject to the MRP Overlay Zone (Ventura Co 2016a, pg.4-5).

A short length of the transmission line and natural gas and recycled-water pipelines would be constructed on land in the MRP overlay zone. Approximately 78.4 square feet of land designated with the MRP overlay zone would be developed with transmission poles. The two pipelines would be minimal in size and buried underground. The minimal scale of development would not impact access, supply, or conflict with this overlay zone. The project would be **consistent** with this zone.

ARTICLE 5: Uses and Structures by Zone

Sec. 8105-4 Permitted Uses in Open Space, Agricultural, Residential and Special Purpose Zones	Grading – within an overlay zone – Pursuant to Article 9
	Pipelines/Transmission Lines, Aboveground- Planning Director-approved Conditional Use Permit

The transmission line and natural gas and recycled-water pipelines are proposed on land zoned as open space and agricultural. These properties are also in the MRP overlay zone.

Grading on land zoned as Open Space and Agricultural would occur along the transmission line route and the natural gas and recycled-water pipeline routes (CAL2015a, pg. 5.11-12). See discussion under the “Article 9” subsection for standards in a mineral resource protection overlay zone and the project’s consistency with these standards. The project would be a permitted use **consistent** with this provision.

The transmission line would be the only project feature installed aboveground in OS and AE zones. See discussion under the “Article 11” subsection for permit approval standards and a discussion of the project’s consistency with these standards. The project would be a permitted use **consistent** with this provision.

Sec. 8105-5 Permitted Uses in Commercial and Industrial Zones	Fences and Walls over 6 feet high per Article 6- Zoning Clearance, or other ministerially approved permit unless specifically exempted.
	Grading – within an overlay zone – Pursuant to Article 9
	Pipelines/Transmission Lines, Aboveground- Planning Director-approved Conditional Use Permit
	Public Utility Facilities- Planning Commission-approved Conditional Use Permit
	Signs per requirements of Article 10 - Zoning Clearance, or other ministerially approved permit unless specifically exempted.

The project site would be surrounded by an 8-foot chain-link security fence topped with barbed wire (CAL2015a, pg. 5.13-9). See discussion under the "Article 6" subsection for the project's consistency with this use. The project would be **consistent** with this provision.

The project site is within the MRP overlay zone and may be graded before imported soil fill from Grimes Rock, Inc (at 3500 Grimes Canyon Road, Fillmore), would be added to the project site then graded again. Soil and Water Resources staff noted during a site visit that the site is built up and native soil is buried. See discussion under the "Article 9" subsection for standards in a mineral resource protection overlay zone and the project's consistency with these standards. The project would be **consistent** with this provision.

The transmission line would be the only project linear installed aboveground. The project would install one transmission tower on the project site. This would be the starting point of the 6.6-mile transmission line connecting the project site to the Santa Clara substation. See discussion under the "Article 11" subsection for permit approval standards and the project's consistency with these standards. The project would be **consistent** with this provision.

The project would be considered a public utility facility generating electricity with transmission to the SCE Santa Clara substation. See discussion under the "Article 11" subsection for permit approval standards and the project's consistency with these standards. The project would be **consistent** with this provision.

The applicant would install a sign consistent with the requirements under Article 10 (CEC 2017j). See discussion under the "Article 10" subsection for the standards for signs in the M3 zone and the project's consistency with these standards. The project would be **consistent** with this provision.

ARTICLE 6: Lot Area and Coverage, Setbacks, Height and Related Provisions

Sec. 8106-1.2 Development Standards for Uses and Structures in Commercial, Industrial and Special Purpose Zones	M3 Zone- Minimum lot area (Gross)- 10,000 sq. ft.;
	Maximum percentage of building coverage- See General Plan (40 percent)
	Required minimum setbacks- From street- 10 ft Each interior yard- as specified by permit
	Maximum structure height- Main structure- as specified by permit Accessory structure- as specified by permit

The project site is 9.79 acres and is **consistent** with the minimum lot area standard.

The maximum percentage of building coverage for a parcel in the M3 zone according to Figure 3.16b in the general plan (Building Intensity/Employment Density Table- Mission Rock Road Existing Community) is 40 percent of lot area. With approximately a total of 4,480 square feet in buildings, and a lot size of 9.79-acres, there would be approximately 1.1 percent of building coverage for the project. The project would be **consistent** with the maximum percentage of building coverage standard.

Section 8106-3 states that setback regulations are intended to apply to buildings with foundations, and other structures such as those for parking and storage, whether or not they have foundations, and to open storage. The control building and garage/warehouse building would be setback more than 10 feet from the street. Additionally, no open storage is proposed. The project would be **consistent** with minimum setback standards.

The main and accessory structure heights are set based on the permit. Transmission pole number 1 would be the tallest structure on the Mission Rock site and have a height of 81.5-feet above ground level. The exhaust stacks would be 60-feet in height. The project would be **consistent** with the maximum structure height standards.

Sec. 8106-7.4 Accessory Structures	Provided that an accessory structure is set back 20 feet from all property lines, it may exceed 15 feet in height, but it shall not exceed the maximum allowed height of the principal structure unless a discretionary permit is issued pursuant to Article 5.

The Mission Rock project site AFC General Arrangement Figure 2.1-1R1 shows the closest accessory structure to the property line is transmission pole #1 at 81.5-feet and set back from the southern property boundary by approximately 20-feet. With the size of the property, the project could be designed **consistent** with the setback requirement.

Sec. 8106-8 - Miscellaneous Regulations	
Sec. 8106-8.1 - Fences, Walls and Hedges	
Sec. 8106-8.1.1	No fences over three feet high may be placed in a required sight triangle, in a required setback adjacent to a street, or in a ten-foot by ten-foot right triangle on each side of a driveway on a side property line. (See Sec. 8106-8.4) A maximum seven-foot-high fence may be located in other areas of a lot. Exceptions:
	c. A maximum eight-foot-high fence may be located: (1) On a vacant or developed lot zoned OS, AE, or RA, or on any vacant or developed lot in a commercial or industrial zone, anywhere except within a required sight triangle or setback adjacent to a street;

The project site would be surrounded by an 8-foot chain-link security fence topped with barbed wire (CAL 2015a, pg. 5.13-9). Based on this exception, an 8-foot fence is permitted. The project would be **consistent** with this regulation. For more discussion about site security measures, refer to the **Hazardous Materials Management** section of this staff assessment.

Sec. 8107-14.1 Temporary Offices During Construction	Temporary structures acceptable to the Building and Safety Division may be used as temporary offices on a construction site, or on an adjoining lot if owned by the same developer or property owner, in accordance with Article 5, provided that a building permit for such construction is in full force and effect on the same site, or if a land use permit or subdivision has been approved on the site and a Zoning Clearance for grading or use inauguration has been issued. The units shall be removed from the site within 45 days after a clearance for the occupancy for the permitted use is issued by the Building and Safety Division or, in the case of a phased residential or commercial project, upon conclusion of the development program. A surety bond for removal of the temporary structure(s) may be required at the discretion of the Planning Director.

The applicant cannot definitively state at this stage whether they would use a temporary office on the Mission Rock site, but they stated they would comply with applicable LORS (CEC2017l). If a temporary office were installed, it would need to be removed within 45 days of completion of project construction. The project would be **consistent** with this standard.

Sec. 8107-15 Storage of Building Materials, Temporary	The temporary storage of construction materials is permitted on a lot adjacent to one on which a valid Zoning Clearance and Building Permit allowing such construction are in force, or on a project site within a recorded subdivision. Such storage is permitted during construction and for 45 days thereafter.

The applicant would use the property adjacent to the Mission Rock site's northern property boundary for construction laydown and parking. The applicant has stated that they would comply with applicable LORS (CEC2017l). The applicant would need to remove construction materials within 45 days of completion of project construction. The project would be **consistent** with this standard.

Sec. 8107-25.5 - Minimum Requirements for Tree Alteration, Felling or Removal Without a Tree Permit	Except as provided in Sec. 8107-25.4 (exemptions), the alteration, felling or removal of Protected Trees may occur without a Tree Permit under the following circumstances, and in accordance with the following standards. Said alterations shall be performed by the property owner or resident with the owner's consent, or by a qualified tree trimmer. For all the following trimming and pruning, ISA standards shall be used and in all such cases climbing spurs shall not be used:
	e. Pruning and trimming living limbs and roots each of which exceeds the size set forth in "c" above (prune living limbs and roots less than 20 percent of trunk girth provided trimming does not endanger life of the tree, result in structure imbalance, or remove more than 20 percent of tree canopy or root system) by a Public Utility Company or its contractors for the purpose of protecting the public and maintaining adequate clearance from public utility conduits and facilities.

Operation of the transmission line would require on-going periodic maintenance (tree trimming) in several areas along the route (approximately 2.8-acres) to ensure that trees and other tall vegetation do not interfere with the safe operation of the lines. The areas along the line are generally around the Todd and Ellsworth barrancas and the Mission Rock fence line. See the **Biological Resources**, **Cultural Resources**, and **Visual Resources** sections of this staff assessment of more information. The project would be **consistent** with this standard.

Sec. 8107-25.7 - Discretionary Tree Permits and Standards	Except as provided in Secs. 8107-25.4, 8107-25.5 or 8107-25.6, no person shall alter, fell, or remove a Protected Tree without obtaining a Planning Director approved discretionary Tree Permit. The Planning Director may approve a discretionary Tree Permit application with necessary conditions to promote the purpose of these tree ordinance regulations if:
Sec. 8107-25.7.4	The tree alteration, felling, and/or removal is part of a larger project which, as conditioned, would on balance result in significant benefits to the public and if:
	c. The public benefits outweigh the unavoidable negative impacts associated with the removal of protected trees required by the project.

As part of the project construction, protected trees may be impacted. At this point there is not enough specificity of information in the data responses to know whether or how many protected trees would be altered, felled, or removed by the project. Section 8107-25-3 notes that no person shall alter, fell, or remove a Protected Tree except in accordance with the provisions of Section 8107-25 et seq. and that if tree alteration, felling, or removal is part of a project requiring a discretionary permit, then the tree permit application and approval process should accompany the parent project discretionary permit. Consistent with Section 8107-25.7.4.c, the potential alteration, felling, or removal of protected trees would be part of the larger Mission Rock project and could be approved based on public benefit outweighing unavoidable impacts to protected trees. Mission Rock would provide socioeconomic and cultural resources benefits. Refer to “Noteworthy Public Benefits” subsections in these sections of this staff assessment for more information.

Installation of the transmission line may require protected trees to be pruned or trimmed to ensure a ten foot clearance from the transmission line (line sag) and conductor for safe operation of the transmission line. Also if the location of the transmission line conflicts with a protected tree, the tree may need to be removed. Furthermore, both Cultural Resources and Visual Resources staff proposes conditions of certification (**CUL-14** and **VIS-2**) to reduce the impact associated with tree alternation, felling, or removal. These conditions also include replacement planting.

Any alteration of a protected tree during project operations is allowed under Section 8107-25.5.e which allows for the pruning and trimming living limbs by a Public Utility Company or its contractors for the purpose of protecting the public and maintaining adequate clearance from public utility conduits and facilities. See the **Biological Resources**, **Cultural Resources**, and **Visual Resources** sections of this staff assessment for more information. The project would be **consistent** with this entitlement.

ARTICLE 8: Parking and Loading Requirements

Sec. 8108-4.7 Table of Parking Space Requirements By Land Use	Indicates the number of required off-street motor vehicle and bicycle parking spaces that shall be provided for various land uses.
Public Service/Utility Facility Land Uses (Electrical Substations, Pump Stations, etc.) and Public Utility Buildings	+/- 10 percent of the Total (motor vehicle spaces required)
Offices	Motor vehicle spaces required: 1 space per 300 sq. ft. of gross floor area. Bicycle spaces required: 1 long-term bicycle parking space (generally enclosed locker) per 30 employees.
Other Buildings or Land Uses	As determined by decision-making body.
Automated and unattended	None
Warehousing (includes freight terminals)	1 space per 1,500 sq. ft. of gross floor area, plus spaces required for associated office space and loading bays. Bicycle spaces required: 1 long-term bicycle parking space (generally enclosed locker) per 60,000 sq. ft. of gross floor area or 1 per 25 employees (as appropriate per Planning Director).

The control building measures approximately 1,376 square feet and would be considered an "office" for parking space calculation purposes (CAL 2015a, pg. 5.13-9). Staff spoke with Mr. Winston Wright, Permitting Area Manager with the Ventura County Planning Department about how the Planning Department would classify the project's proposed garage/warehouse building for parking requirements. Mr. Wright directed staff to the parking requirements for warehousing land use. The garage/warehouse building measures approximately 3,104 square feet (CAL 2015a, pg. 5.13-9)

Based on the above standards; Mission Rock would need to provide seven parking spaces, which would include the required Americans with Disabilities Act (ADA) accessible parking, consistent with the California Building Standards Code and the ADA. The AFC General Arrangement Figure 2.1-R1 shows four parking spaces; however, the applicant has indicated they will add parking spaces to the project design to meet the above standards (CEC 2017j). The project site would be large enough to accommodate the seven required spaces. The project would be designed to be **consistent** with these requirements.

ARTICLE 9: Standards for Specific Zones and Zone Types

Sec. 8109-0.6.4 - M-Zones	The following regulations shall apply to all industrial zones (M1, M2 and M3):
	a. Required yards adjacent to streets, not used for other purposes, shall be improved with appropriate permanently maintained evergreen plant material or ground cover. Such landscaping shall extend to the street curb line, where appropriate.
	b. Trees, approved as to type, number and location by the Planning Director, shall be planted along the street line of each site. Such street trees may also be located on private property and grouped or clustered as appropriate.
	d. At least five percent of any permit area in the M2 or M3 zone shall be landscaped.

According to Section 8109-0.6, landscaping of development projects shall be in conformance with any adopted Ventura County Landscape Design Guidelines and the standards set forth below. Where the standards below may conflict with guidelines, the more restrictive standards shall apply.

The applicant has not provided a landscape design plan for the project site. Visual Resources staff has recommended Condition of Certification **VIS-2**, which would give Ventura County the opportunity to review and comment, with compliance project manager reviewing and approving the design plan. The project could be designed to be **consistent** with the required yard and tree landscaping regulations.

Based on the project's 9.79 acre-site, approximately 0.49-acres of the site would need to be landscaped. The project landscaping could be designed to be **consistent** with this standard.

Sec. 8109-3 - Standards for Industrial Zones	
Sec. 8109-3.1 - General Standards	The following standards shall apply to development in all industrial zones:
Sec. 8109-3.1.1 - Undergrounding of Utilities	Utility lines, including electric, communications, street lighting and cable television, shall be placed underground by the applicant, who shall make the necessary arrangements with the utility companies for the installation of such facilities. This requirement may be waived by the Planning Director where it would cause undue hardship or constitute an unreasonable requirement, provided that such waiver is not in conflict with California Public Utilities Commission rules, requirements or tariff schedules. This section shall not apply to utility lines which do not provide service to the area being subdivided. Appurtenant structures and equipment such as surface-mounted transformers, pedestal-mounted terminal boxes and meter cabinets may be placed aboveground.

The new natural gas and recycled-water pipelines connecting to the project would be installed underground, consistent with this ordinance. This section would not apply to the new electric transmission line because it would be a generator transmission line connecting the power plant to the regional electric grid at the Santa Clara substation, not a distribution line providing electric service to a proposed subdivision. The project would be **consistent** with this standard.

Sec. 8109-3.1.3 - Industrial Performance Standards	Industrial performance standards are the permitted levels of operational characteristics resulting from processes or other uses of property. Continuous compliance with the following performance standards shall be required of all uses, except as otherwise provided for in these regulations:
	a. Objectionable Factors - The following shall be maintained at levels which are appropriate for the zone and geographic area and are not objectionable at the point of measurement when the use is in normal operation: (1) Smoke, odors, vapors, gases, acids, fumes, dust, dirt, fly ash or other forms of air pollution; (2) Noise, vibration, pulsations or similar phenomena; (3) Glare or heat; (4) Radioactivity or electrical disturbance. The point of measurement for these factors shall be at the lot or ownership line surrounding the use.

Land Use staff consulted with staff in the technical areas of Air Quality, Noise and Vibration, Visual Resources, Waste Management, and Worker Safety and Fire Protection about the project's potential to be a source of objectionable factors. When the power plant and battery facility are in normal operation, they would not be a source of objectionable factors, with the exception of air pollution. The above-listed staff, with the exception of Air Quality, concluded when the project is in normal operation it would not generate significant levels of smoke, odors, or vapors; noise, vibration, or similar phenomena; glare or heat; or electrical disturbance with the inclusion of recommended conditions of certification, which would be appropriate for this heavy industrial zoned property and surrounding land uses. The project would not generate fly ash or radioactivity.

The applicant has not yet fully identified mitigation for Mission Rock's potential air quality impacts. Full implementation of the recommended air quality conditions of certification would generally result in mitigation to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level. However, these conditions have not yet been completed as the applicant has not yet identified specific mitigation. Assuming adequate mitigation would be implemented ahead of publication of the Final Staff Assessment, air quality impacts would be mitigated to less than significant. Nonetheless, until the air quality impacts are fully mitigated, the project's contribution to existing violations of the ambient air quality standards would be significant. While the project would not generate air pollution during normal operation at levels that are inappropriate for the zone and geographic area, because the project area air basin is in non-attainment for ozone and particulate matter less than 10 microns in diameter (PM10), the project's contribution to these pollutants would be considered significant. Until air quality impacts can be fully mitigated, the project's consistency with this standard is **indeterminate**. See the **Air Quality** section of this staff assessment for more information.

Sec. 8109-3.1.3 - Industrial Performance Standards	b. Hazardous Materials - Land or buildings shall not be used or occupied in any manner so as to create any fire, explosive or other hazard. All activities involving the use or storage of combustible, explosive, caustic or otherwise hazardous materials shall comply with all applicable local and national safety standards and shall be provided with adequate safety devices against the hazard of fire and explosion, and adequate fire-fighting and fire suppression equipment in compliance with Ventura County Fire Prevention Regulations. The burning of waste materials in open fires without written approval of the Fire Department is prohibited.

Land Use staff consulted with Hazardous Material Management, Waste Management, and Worker Safety and Fire Protection staff about hazardous materials and the project. Use, storage, and disposal of hazardous materials would be subject to recommended conditions of certification ensuring compliance with local, state, and federal safety standards. The **Worker Safety and Fire Protection** section of this staff assessment describes the fire prevention features of the project including the recommended conditions of certification. See the **Hazardous Materials Management** section of this staff assessment for more information about the use of hazardous materials on the project site. See the **Waste Management** section of this staff assessment for more information about the transportation and disposal of hazardous materials used and generated at the project site. The project would be **consistent** with this standard.

Sec. 8109-3.1.3 - Industrial Performance Standards	c. Liquid and Solid Wastes - Liquid or solid wastes discharged from the premises shall be properly treated prior to discharge so as not to contaminate or pollute any watercourse or groundwater supply or interfere with bacterial processes in sewage treatment. The disposal or dumping of solid wastes, such as slag, paper and fiber wastes, or other industrial wastes shall not be permitted on any premises.

Land Use staff consulted with Soil and Water Resources and Waste Management staff about liquid and solid wastes discharged from the project site. Discharge and disposal of liquid and solid wastes would be subject to recommended conditions of certification ensuring compliance with local, state, and federal LORS. Soil and Water Resources and Waste Management staff concluded that the project would have a less than significant impact with the inclusion of recommended conditions of certification. See their sections in this staff assessment for more information. The project would be **consistent** with this standard.

Sec. 8109-3.4 - M3 Zone	The following regulations shall apply to the M3 Zone:
Sec. 8109-3.4.1	Metal buildings, including accessory buildings, either shall have exterior surfaces constructed or faced with a stainless steel, aluminum, painted, baked enamel, or similarly finished surface; or shall be reasonably screened from view from any street by other buildings or by appropriate walls, fencing, earth mounds or landscaping; or shall be located not less than 100 feet from the street centerline.

The applicant has indicated that both the control building and garage/warehouse building would be metal with flat, un-textured finish, painted Amercoat GN-3 (green) or Amercoat BK-1 (black) to match the neighboring granite asphalt recycling plant (CAL 2015a, pg. 5.13-9). The project would be **consistent** with this regulation. See the **Visual Resources** section of this staff assessment for more information.

Sec. 8109-4 - Standards for Overlay and Special Purpose Zones	
Sec. 8109-4.4 - Mineral Resource Protection Overlay Zone	
Sec. 8109-4.4.2 - Permit Standards	Discretionary permits shall not be granted within areas with a "MRP" overlay zone designation if the use will significantly hamper or preclude access to, or the extraction of, a mineral resource, except where one or more of the following findings can be made:
	a. Such use is primarily intended to protect life or property.
	b. Such use provides a significant public benefit.
	c. The resource is not present at the site.
	d. Extraction of the resource is not technically or economically feasible.
	e. Extraction of the resource is not feasible due to limitations imposed by the County.

Development on the Mission Rock site would not hamper or preclude mineral resource extraction as the site may be graded before the project's imported soil fill is added to the site to build it up. Furthermore, Soil and Water Resources staff noted during a site visit that the site appears to be built up with soil fill instead of native soil.

The small portion of the transmission line and recycled-water and natural gas pipelines proposed on land in the MRP overlay zone would not hamper or preclude mineral resource extraction as the transmission towers would be minimal in size (5 to 6 feet in diameter) and the recycled-water and natural gas pipelines would be buried. The project would be **consistent** with these permit standards.

ARTICLE 10: Sign Requirements

Sec. 8110-5.1 - Sign Standards	
Commercial and Industrial Zones- On-site attached- Identification-	Maximum number per lot - No limit. Permitted area - (h) Each wall or building face is permitted one square foot of sign area per linear foot of wall length; maximum 120 square feet, regardless of the number of signs. Maximum height (ft) - (i) Sign may not extend above the eaves of a gable roof, nor more than two feet above the face of the canopy or a parapet wall to which it is attached. Maximum length (ft) - (d) Sign may be as long as the building wall to which it is attached, and may wrap around a corner, but may not project beyond a corner.

The applicant would include a sign meeting county sign requirements (CEC 2017j). The project would be **consistent** with these standards.

ARTICLE 11: Entitlements – Process and Procedures (Conditional Use Permit Findings)

Sec. 8111-1.2.1.1 Permit Approval Standards	Conditional Use Permits may only be granted if all the following standards, notwithstanding subsection 'e' below, are met, or if such conditions and limitations, including time limits, as the decision-making authority deems necessary, are imposed to allow the standards to be met.
	a. The proposed development is consistent with the intent and provisions of the County's General Plan and of Division 8 Chapter 1 (Non Coastal Zoning Ordinance) of the Ventura County Ordinance Code.

As discussed under the "Article 5" subsection, the power plant and battery facility (land uses identified as public utility facilities) are allowed with a Planning Commission-approved conditional use permit and the electrical transmission line (land use identified as aboveground transmission lines) is allowed with a Planning Director-approved conditional use permit on General Industrial (M3) zoned land. The transmission line is allowed with a Planning Director-approved conditional use permit on Agricultural and Open Space Special Purpose zoned land. Because of the in-lieu permitting with an Energy Commission license, staff assesses whether the project would meet the standards for a conditional use permit.

With the exception of Section 8109-3.1.3.a and Section 8111-1.2.1.1.d in the zoning code, the power plant and battery facility and transmission line are consistent with the intent and provisions of the general plan and zoning code. At this time, staff cannot determine project consistency with Section 8109-3.1.3.a and Section 8111-1.2.1.1.d of the zoning code. See "Article 9", Section 8109-3.1.3.a and "Article 11" Section 8111-1.2.1.1.d for more information. Until air quality impacts are fully mitigated, the project's consistency with this standard is **indeterminate**.

Sec. 8111-1.2.1.1 Permit Approval Standards	b. The proposed development is compatible with the character of surrounding, legally established development.

The power plant, battery facility, and transmission line are compatible with the character of the surrounding, legally established development.

The power plant and battery facility are proposed on an industrial property surrounded by other industrial uses. While there are a few residences scattered in a 1-mile radius of the project site (some conforming uses and some not conforming), the overall land uses are industrial with properties zoned as general industrial. General Industrial zoning allows a broad range of general manufacturing, processing, and fabrication activities (Ventura Co 2016a, pg. 4-4). This zone is the heaviest manufacturing zone and is intended for uses not requiring highly restrictive performance standards for uses on adjoining properties. Adjacent to the west, south, and east property boundaries are agricultural land uses.

The transmission line is proposed on and is surrounded by agricultural and open space/grazing land uses. Transmission lines are compatible with agricultural and grazing land uses as the uses can continue under and around the transmission line.

The project would be **consistent** with this standard.

Sec. 8111-1.2.1.1 Permit Approval Standards	c. The proposed development would not be obnoxious or harmful, or impair the utility of neighboring property or uses.

Noise, odors, or glare are the type of disturbances that could be considered obnoxious to neighboring properties. Neither the power plant and battery facility, nor the transmission line would be obnoxious or harmful, or impair the utility of neighboring property or uses.

The power plant and battery facility are proposed in an industrial area in the heaviest manufacturing zone (M3). The transmission line is compatible with the agricultural and open space land on which it is proposed. Noise and Vibration, Transmission Line Safety and Nuisance, and Visual Resources staff concluded that project impacts would be less than significant with the recommended conditions of certification.

The project would be **consistent** with this standard.

Sec. 8111-1.2.1.1 Permit Approval Standards	d. The proposed development would not be detrimental to the public interest, health, safety, convenience, or welfare.

Neither the power plant and battery facility, nor the transmission line would be detrimental to the public interest, health, safety, convenience, or welfare. The project is compatible with the surrounding land uses and consistent with the general plan land use designations and zoning designations. Staff in the technical areas of hazardous materials management, noise and vibration, soil and water resources, transmission line safety and nuisance, visual resources, waste management, and worker safety and fire protection has concluded that project impacts would be less than significant with the inclusion of recommended conditions of certification.

The applicant has not yet fully identified mitigation for Mission Rock's potential air quality impacts Energy Commission staff is developing a CEQA impact analysis and could propose mitigation measures as a result of that analysis. Once the applicant has identified full mitigation for air quality impacts, and Air Quality staff has evaluated the project's CEQA impacts, Air Quality staff would recommend air quality conditions of certification to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level. Until air quality impacts can be fully mitigated, the project's consistency with this standard is **indeterminate**.

Sec. 8111-1.2.1.1 Permit Approval Standards	e. The proposed development, if allowed by a Conditional Use Permit, is compatible with existing and potential land uses in the general area where the development is to be located.

The power plant and battery facility are proposed in the heaviest manufacturing zone (M3), which is intended for uses not requiring highly restrictive performance standards for uses on adjoining properties. The transmission line is proposed on agricultural and open space land and is compatible with agricultural and grazing land uses on these properties. The transmission line is not an extensive use of land with approximately 0.02 acres of farmland used for the transmission poles. Agricultural operations could be

carried out under and around the transmission line. The project would be **consistent** with this standard.

Sec. 8111-1.2.1.1 Permit Approval Standards	f. The proposed development will occur on a legal lot.

The power plant and battery facility, and transmission pole number 1 are proposed at 1025 Mission Rock Road, which has a certificate of compliance issued and thus is a legal lot (Ventura Co 2016a, pg. 2-15 and Ventura Co 2011, pgs. 5 and 6). The transmission line poles would be constructed on 15 parcels within new easements. According to the definition of legal lot in both the Ventura County Non Coastal Zoning Code and Ventura County Subdivision Ordinance, easements and rights-of-way are not lots (Ventura Co 2016a, pg. 2-14). The creation of a new easement on a lot would reduce the net acreage, but not the gross (total) acreage of the property. Therefore, the creation of a new easement would not affect the gross size of the lot, and as the minimum lot area is based on gross area (for land uses and structures), the new easements would not affect the minimum lot area (Ventura Co 2016a, pg. 3-1). The project would be **consistent** with this standard

Sec. 8111-1.2.1.2 - Additional Standards for AE Zone	In addition to the provisions of Section 8111-1.2.1.1, before any permit is issued for any structure or land use which requires a discretionary permit in the AE Zone, the following standards shall be met or be capable of being met with appropriate conditions and limitations being placed on the use:
	a. That the establishment or maintenance of this use will not significantly reduce, restrict or adversely affect agricultural resources or the viability of agricultural operations in the area;

Sections of the project's transmission line are proposed on AE zoned land. The transmission poles would not significantly reduce agricultural land as the project would take minimal land (0.02 acres) for the transmission poles. The operation and maintenance of the transmission line and associated right-of-way (75 feet wide) would not significantly restrict or adversely affect agricultural resources or the viability of agricultural operations. Agricultural operations could continue under and around the transmission line. There is a portion of the transmission line route that diagonally bisects agricultural property, particularly between pole numbers 18 to 24 (5 poles, a distance of approximately 1 mile long. While crops can be grown under and around the transmission line, pesticide application and irrigation operations may need to be rerouted around the transmission line. The applicant would need to secure an easement along the transmission line route with the particular property owners. The lease of the land could help alleviate costs associated with possible rerouting of agricultural operations. Operation of the transmission line would require on-going periodic maintenance (tree trimming) in several areas along the route to ensure that trees and other tall vegetation would not interfere with the safe operation of the lines and conductors. There are several areas where the transmission line would cross orchards. If orchard trees grow to the extent of possible interference to the safe operations of the transmission lines, they would need to be pruned. Section 8107-25.5 (e) allows for pruning and trimming of tree limbs and roots. See discussion under the "Article 7" subsection for the project's consistence with Section 8107-25.5 (e). The project would be **consistent** with this standard.

Sec. 8111-1.2.1.2 - Additional Standards for AE Zone	b. That structures will be sited to minimize conflicts with agriculture, and that other uses will not significantly reduce, restrict or adversely affect agricultural activities on-site or in the area, where applicable; and

The majority of the transmission line would be located parallel to the property line or parallel with the edge of the agricultural field. As discussed previously, there is a portion along the transmission line route where the transmission would diagonally bisect agricultural land. Pesticide application and irrigation operations may need to be rerouted around the transmission line. The lease of the land (transmission right-of-way) could help alleviate costs associated with possible adjusting of some agricultural operations. Agricultural operations would not be significantly restricted by addition of the transmission line. The project would be **consistent** with this standard.

Sec. 8111-1.2.1.2 - Additional Standards for AE Zone	c. That the use will be sited to remove as little land from agricultural production (or potential agricultural production) as possible.

Every effort to site the transmission line to remove as little land from agricultural production would be made. The transmission poles measure five feet in diameter and some measure six feet in diameter and would take up approximately 0.02 acres of agricultural land. The transmission poles and lines would be located within a new 75-foot wide (37.5 ft. half width) right-of-way leased from the property owners over which the transmission line would cross. Agricultural activities would be able to continue under (e.g. row crops) and around the transmission line. As discussed previously, a portion of the transmission line would diagonally bisect agricultural land. The lease of the land (transmission right-of-way) could help alleviate costs of adjusting some agricultural operations. The project would be **consistent** with this standard.

Sec. 8111-1.3 - Other Entitlements	
Sec. 8111-1.3.1 - Tree Permit	A ministerial or discretionary Tree Permit is required, pursuant to Sec. 8107-25 et seq., for the alteration of Protected Trees in all applicable Base Zones and Overlay Zones; see also Article 9. Ministerial Tree Permits shall be processed in the same manner as Zoning Clearances, and discretionary Tree Permits shall be processed in the same manner as Conditional Use Permits. A Tree Permit may be issued for the alteration of one or more Protected Trees as appropriate.

As part of the project construction, protected trees may be impacted. At this point there is not enough specificity of information in the data responses to know whether or how many protected tree would be altered, felled, or removed by the project.

Installation of the transmission line may require protected trees to be pruned or trimmed to ensure a ten-foot clearance from the transmission line (line sag) and conductor for safe operation of the transmission line. Also if the location of the transmission line conflicts with a protected tree, the tree may need to be removed. Both Cultural Resources and Visual Resources staff propose conditions of certification (**CUL-14** and **VIS-2**) to reduce the impact associated with tree alternation, felling, or removal. These conditions also include replacement planting. See “Article 7” for discussion of discretionary tree permits and exceptions.

Any alteration of a protected tree during project operations is allowed under Section 8107-25.5.e which allows for the pruning and trimming living limbs by a Public Utility Company or its contractors for the purpose of protecting the public and maintaining adequate clearance from public utility conduits and facilities. See the **Biological Resources, Cultural Resources, and Visual Resources** sections of this staff assessment for more information. The project would be **consistent** with this entitlement.

Conclusion

Until the air quality impacts have been fully mitigated, the project's consistency with the permitted uses, requirements, and standards in the Ventura County Non Coastal Zoning Code is **indeterminate**.

Ventura-Santa Paula Greenbelt

The Mission Rock project site and the routes of the proposed transmission lines, natural gas pipeline, and recycled-water pipeline are within the Ventura-Santa Paula Greenbelt (Ordinance 4338). The greenbelt is a voluntary agreement between the Ventura County Board of Supervisors and one or more city councils regarding development of agricultural and/or open space areas beyond city limits. Greenbelts protect open space and agricultural lands and reassure property owners located within these areas that lands will not be prematurely converted to agriculturally incompatible uses. The Ventura County General Plan, Zoning Ordinance, and Save Open-space and Agricultural Resources (SOAR) ordinance[8] control land uses within the greenbelt (Ventura Co 2006).

Permitted uses in the greenbelt include only the land uses compatible with agriculture, open space and existing community, and uses compatible with zoning designations agriculture exclusive, rural exclusive, open space, and general industrial (M3). These general plan land uses and zoning ordinance zoning designations are the greenbelt's land use and zoning designations.

The power plant and battery facility, transmission line, and recycled-water and natural gas pipelines are compatible with the land use designation and zoning designation in which they are proposed. Refer to the previous discussion under 3.2 Land Use Designations in the "Ventura County General Plan" subsection.

The Mission Rock site is zoned General Industrial so would not convert agricultural land.

As previously discussed under the "Article 11" subsection, the transmission line and recycled-water and natural gas pipelines are consistent uses with agricultural and open space land. The transmission poles would be the only land that would be converted to non-agricultural and non-open space land (0.02 acres).

[8] SOAR does not contain any directives for development projects. Therefore, this is not applicable to the proposed project.

Conclusion

The project would be consistent with the uses in the Ventura-Santa Paula Greenbelt.

Compliance with LORS

Staff's independent analysis of Mission Rock concludes that the project would comply with all applicable land use LORS. **Land Use Table 5** summarizes the project's conformance with applicable LORS.

Land Use Table 5
LORS Applicable to the Land Use Analysis and Mission Rock Consistency

Applicable LORS	***Description***	***Mission Rock LORS Consistency***	
VENTURA COUNTY NON COASTAL ZONING ORDINANCE			
ARTICLE 5: Uses and Structures by Zone			
Sec. 8105-4 – Permitted Uses in Open Space, Agricultural, Residential and Special Purpose Zones	Grading – within an overlay zone – Pursuant to Article 9	**Consistent**	Grading on land zoned as open space and agricultural and within the MRP would occur along the transmission line route and the natural gas and recycled-water pipeline routes. See discussion under the "Article 9" subsection for standards in the MRP overlay zone and the project's consistency with these standards.
	Pipelines/Transmission Lines, Aboveground- Planning Director-approved Conditional Use Permit	**Consistent**	The transmission line would be the only project feature installed aboveground. See discussion under the "Article 11" subsection for permit approval standards and the project's consistency with these standards.
Sec. 8105-5 – Permitted Uses in Commercial and Industrial Zones	Fences and Walls over 6 feet high per Article 6- Zoning Clearance, or other ministerially approved permit unless specifically exempted.	**Consistent**	The project site would be surrounded by an 8-foot chain-link security fence topped with barbed wire. See discussion under the "Article 6" subsection for the project's consistency with this use.
	Grading – within an overlay zone – Pursuant to Article 9	**Consistent**	The project site is within the MRP overlay zone and may be graded before imported soil fill would be added to the project site then graded. The project site is built up and native soil is buried. See discussion under the "Article 9" subsection for standards in the MRP overlay zone and the project's consistency with these standards.
	Pipelines/Transmission Lines, Aboveground- Planning Director-approved Conditional Use Permit	**Consistent**	The transmission line would be the only project feature installed aboveground. See discussion under the "Article 11" subsection for permit approval standards and the project's consistency with these standards.
	Public Utility Facilities- Planning Commission-approved Conditional Use Permit	**Consistent**	The project would be considered a public utility facility generating electricity with transmission to the SCE Santa Clara substation. See discussion under the "Article 11" subsection for

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
			permit approval standards and the project's consistency with these standards.
	Signs per requirements of Article 10 - Zoning Clearance, or other ministerially approved permit unless specifically exempted.	**Consistent**	The project signage would be designed consistent with the requirements under Article 10.
ARTICLE 6: Lot Area and Coverage, Setbacks, Height and Related Provisions			
Sec. 8106-1.2 Development Standards for Uses and Structures in Commercial, Industrial and Special Purpose Zones	M3 Zone- Minimum lot area (Gross)- 10,000 sq. ft.;	**Consistent**	The project site is 9.79 acres.
	Maximum percentage of building coverage- See General Plan (40 percent)	**Consistent**	There would be approximately 1.1 percent of building coverage for the project.
	Required minimum setbacks- From street- 10 ft Each interior yard- as specified by permit	**Consistent**	The control building and garage/warehouse building would be setback more than 10 feet from the street. Additionally, no open storage is proposed.
	Maximum structure height- Main structure- as specified by permit Accessory structure- as specified by permit	**Consistent**	Transmission pole number 1 would be the tallest structure on the Mission Rock site and have a height of 81.5 feet above ground level. The exhaust stack would be 60 feet in height.
Sec. 8106-7.4 Accessory Structures	Provided that an accessory structure is set back 20 feet from all property lines, it may exceed 15 feet in height, but it shall not exceed the maximum allowed height of the principal structure unless a discretionary permit is issued pursuant to Article 5.	**Consistent**	The closest accessory structure to the property line is transmission pole #1 at 81.5 feet and set back from the southern property boundary by approximately a little less than 20 feet. With the size of the property, the project could be designed consistent with the setback requirement.
Sec. 8106-8 - Miscellaneous Regulations			
Sec. 8106-8.1 - Fences, Walls and Hedges			
Sec. 8106-8.1.1	No fences over three feet high may be placed in a required sight triangle, in a required setback adjacent to a street, or in a ten-foot by ten-foot right triangle on each side of a driveway on a side property line. (See Sec. 8106-8.4) A maximum seven-foot-high fence may be located in other areas of a lot. Exceptions:		
	c. A maximum eight-foot-high fence may be located: (1) On a vacant or developed lot zoned OS, AE, or RA, or on any vacant or developed lot in a commercial or industrial zone, anywhere except	**Consistent**	The project site would be surrounded by an 8-foot chain-link security fence topped with barbed wire.

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
	within a required sight triangle or setback adjacent to a street;		
ARTICLE 7: Standards for Specific Uses			
Sec. 8107-14.1 Temporary Offices During Construction	Temporary structures acceptable to the Building and Safety Division may be used as temporary offices on a construction site, or on an adjoining lot if owned by the same developer or property owner, in accordance with Article 5, provided that a building permit for such construction is in full force and effect on the same site, or if a land use permit or subdivision has been approved on the site and a Zoning Clearance for grading or us inauguration has been issued. The units shall be removed from the site within 45 days after a clearance for the occupancy for the permitted use is issued by the Building and Safety Division or, in the case of a phased residential or commercial project, upon conclusion of the development program. A surety bond for removal of the temporary structure(s) may be required at the discretion of the Planning Director.	**Consistent**	The applicant would likely use a temporary office that would need to be removed within 45 days of completion of project construction.
Sec. 8107-15 Storage of Building Materials, Temporary	The temporary storage of construction materials is permitted on a lot adjacent to one on which a valid Zoning Clearance and Building Permit allowing such construction are in force, or on a project site within a recorded subdivision. Such storage is permitted during construction and for 45 days thereafter.	**Consistent**	The property adjacent to the Mission Rock site's northern property boundary would be used for construction laydown and parking. The applicant has stated that they would comply with applicable LORS The construction materials would need to be removed within 45 days of completion of project construction.
Sec. 8107-25.5 - Minimum Requirements for Tree Alteration, Felling or Removal Without a Tree Permit	Except as provided in Sec. 8107-25.4, the alteration, felling or removal of Protected Trees may occur without a Tree Permit under the following circumstances, and in accordance with the following standards. Said alterations shall be performed by the property owner or resident with the owner's consent, or by a qualified tree trimmer. For all the following trimming and pruning, ISA standards shall		

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
	be used and in all such cases climbing spurs shall not be used:		
	e. Pruning and trimming living limbs and roots each of which exceeds the size set forth in "c" (prune living limbs and roots less than 20 percent of trunk girth provided trimming does not endanger life of the tree, result in structure imbalance, or remove more than 20 percent of tree canopy or root system) above by a Public Utility Company or its contractors for the purpose of protecting the public and maintaining adequate clearance from public utility conduits and facilities.	**Consistent**	On-going periodic tree-trimming would occur in several areas along the transmission line route to ensure for safe operation of the lines.
Sec. 8107-25.7 - Discretionary Tree Permits and Standards	Except as provided in Secs. 8107-25.4, 8107-25.5 or 8107-25.6, no person shall alter, fell, or remove a Protected Tree without obtaining a Planning Director approved discretionary Tree Permit. The Planning Director may approve a discretionary Tree Permit application with necessary conditions to promote the purpose of these tree ordinance regulations if:		
Sec. 8107-25.7.4	The tree alteration, felling, and/or removal is part of a larger project which, as conditioned, would on balance result in significant benefits to the public and if:	**Consistent**	At this point there is not enough specificity of information in the data responses to know whether or how many protected trees would be altered, felled, or removed by the project. Consistent with Section 8107-25.7.4.c, the potential alteration, felling, or removal of protected trees would be part of the larger Mission Rock project and could be approved based on public benefit outweighing unavoidable impacts to protected trees. Mission Rock would provide Socioeconomic and Cultural Resources benefits. Any alteration of a protected tree during project operations is allowed under Section 8107-25.5.e which allows for the pruning and trimming living limbs by a Public Utility Company or its contractors for the purpose of protecting the public and maintaining adequate clearance from public utility conduits and facilities.

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
ARTICLE 8: Parking and Loading Requirements			
Sec. 8108-4.7 Table of Parking Space Requirements By Land Use	Indicates the number of required off-street motor vehicle and bicycle parking spaces that shall be provided for various land uses.		
Public Service/Utility Facility Land Uses (Electrical Substations, Pump Stations, etc.) and Public Utility Buildings	+/- 10 percent of the Total (motor vehicle spaces required)		
Offices	Motor vehicle spaces required: 1 space per 300 sq. ft. of GFA. Bicycle spaces required: 1 long-term bicycle parking space (generally enclosed locker) per 30 employees.	**Consistent**	Mission Rock would need to provide four parking spaces based on this use, with a total of seven spaces for the project. The project would be designed to provide the required seven parking spaces.
Other Buildings of Land Uses	As determined by decision-making body.	**Consistent**	No additional parking spaces would be necessary.
Automated and unattended	None	**Consistent**	No additional parking spaces would be necessary.
Warehousing (includes freight terminals)	1 space per 1,500 sq. ft. of gross floor area, plus spaces required for associated office space and loading bays. Bicycle spaces required: 1 long-term bicycle parking space (generally enclosed locker) per 60,000 sq. ft. of gross floor area or 1 per 25 employees (as appropriate per Planning Director).	**Consistent**	Mission Rock would need to provide three parking spaces based on this use, with a total of seven spaces for the project. The project would be designed to provide the required seven parking spaces.
ARTICLE 9: Standards for Specific Zones and Zone Types			
Sec. 8109-0.6.4 - M-Zones	The following regulations shall apply to all industrial zones (M1, M2 and M3):		
	a. Required yards adjacent to streets, not used for other purposes, shall be improved with appropriate permanently maintained evergreen plant material or ground cover. Such landscaping shall extend to the street curb line, where appropriate.	**Consistent**	Visual Resources staff has recommended Condition of Certification **VIS-2**, requiring that after licensing and prior to construction, the applicant would prepare a detailed landscape plan that would satisfy these standards.
	b. Trees, approved as to type, number and location by the Planning Director, shall be planted along the street line of each site. Such street trees may also be located on private property and grouped or clustered as appropriate.	**Consistent**	See above explanation.

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
	d. At least five percent of any permit area in the M2 or M3 zone shall be landscaped.	**Consistent**	Approximately 0.49-acres of the site would need to be landscaped. The project landscaping could be designed to be consistent with this standard.
Sec. 8109-3 - Standards for Industrial Zones			
Sec. 8109-3.1 - General Standards	The following standards shall apply to development in all industrial zones:		
Sec. 8109-3.1.1 - Undergrounding of Utilities	Utility lines, including electric, communications, street lighting and cable television, shall be placed underground by the applicant, who shall make the necessary arrangements with the utility companies for the installation of such facilities. This requirement may be waived by the Planning Director where it would cause undue hardship or constitute an unreasonable requirement, provided that such waiver is not in conflict with California Public Utilities Commission rules, requirements or tariff schedules. This section shall not apply to utility lines which do not provide service to the area being subdivided. Appurtenant structures and equipment such as surface-mounted transformers, pedestal-mounted terminal boxes and meter cabinets may be placed aboveground.	**Consistent**	The new natural gas and recycled-water pipelines connecting to the project would be installed underground. The transmission line would not be subject to this ordinance.
Sec. 8109-3.1.3 - Industrial Performance Standards	Industrial performance standards are the permitted levels of operational characteristics resulting from processes or other uses of property. Continuous compliance with the following performance standards shall be required of all uses, except as otherwise provided for in these regulations:		
	a. Objectionable Factors - The following shall be maintained at levels which are appropriate for the zone and geographic area and are not objectionable at the point of measurement when the use is in normal operation: (1) Smoke, odors, vapors, gases, acids, fumes, dust, dirt, fly ash or other forms of air pollution; (2) Noise, vibration, pulsations or similar phenomena;	**Indeterminate**	Noise and Vibration, Visual Resources, Waste Management, and Worker Safety and Fire Protection staff concluded that when the power plant and battery are in normal operation, they would not generate significant levels of smoke, odors, vapors, noise, vibration, or similar phenomena; glare or heat; or electrical disturbance with the inclusion of recommended conditions of certification,

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
	(3) Glare or heat; (4) Radioactivity or electrical disturbance. The point of measurement for these factors shall be at the lot or ownership line surrounding the use.		which would be appropriate for this heavy industrial zoned property and surrounding land uses. The project would not generate fly ash or radioactivity. Once Ventura County Air Pollution Control District has evaluated the project, the applicant has identified mitigation for air quality impacts, and Air Quality staff has evaluated the project's CEQA impacts, Air Quality staff would recommend air quality conditions of certification to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level. Until air quality impacts can be fully mitigated, the project's consistency with this standard is **indeterminate**.
	b. Hazardous Materials - Land or buildings shall not be used or occupied in any manner so as to create any fire, explosive or other hazard. All activities involving the use or storage of combustible, explosive, caustic or otherwise hazardous materials shall comply with all applicable local and national safety standards and shall be provided with adequate safety devices against the hazard of fire and explosion, and adequate fire-fighting and fire suppression equipment in compliance with Ventura County Fire Prevention Regulations. The burning of waste materials in open fires without written approval of the Fire Department is prohibited.	**Consistent**	Use, storage, and disposal of hazardous materials would be subject to recommended conditions of certification (Hazardous Materials Management, Waste Management, and Worker Safety and Fire Protection) ensuring compliance with local, state, and federal safety standards.
	c. Liquid and Solid Wastes - Liquid or solid wastes discharged from the premises shall be properly treated prior to discharge so as not to contaminate or pollute any watercourse or groundwater supply or interfere with bacterial processes in sewage treatment. The disposal or dumping of solid wastes, such as slag, paper and fiber wastes, or other industrial wastes shall not be permitted on any premises.	**Consistent**	Discharge and disposal of liquid and solid wastes would be subject to recommended conditions of certification ensuring compliance with local, state, and federal LORS. Soil and Water Resources and Waste Management staff concluded that the project would have a less than significant impact with the inclusion of recommended conditions of certification.

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
Sec. 8109-3.4 - M3 Zone Sec. 8109-3.4.1	The following regulations shall apply to the M3 Zone: Metal buildings, including accessory buildings, either shall have exterior surfaces constructed or faced with a stainless steel, aluminum, painted, baked enamel, or similarly finished surface; or shall be reasonably screened from view from any street by other buildings or by appropriate walls, fencing, earth mounds or landscaping; or shall be located not less than 100 feet from the street centerline.	**Consistent**	The control building and garage/warehouse building would be metal with flat, un-textured finish, painted Amercoat GN-3 (green) or Amercoat BK-1 (black) to match the neighboring granite asphalt recycling plant.
Sec. 8109-4 - Standards for Overlay and Special Purpose Zones			
Sec. 8109-4.4 - Mineral Resource Protection Overlay Zone			
Sec. 8109-4.4.2 - Permit Standards	Discretionary permits shall not be granted within areas with a "MRP" overlay zone designation if the use will significantly hamper or preclude access to, or the extraction of, a mineral resource, except where one or more of the following findings can be made:	**Consistent**	Development on the Mission Rock site appears to be built up with soil fill instead of native soil and electric transmission line is minimal in size and natural gas and recycled-water pipelines would be buried so the project or linears would not hamper or preclude mineral resource extraction.
ARTICLE 10: Sign Requirements			
Sec. 8110-5.1 - Sign Standards			
Commercial and Industrial Zones- On-site attached-Identification-	Maximum number per lot - No limit. Permitted area - (h) Each wall or building face is permitted one square foot of sign area per linear foot of wall length; maximum 120 square feet, regardless of the number of signs. Maximum height (ft) - (i) Sign may not extend above the eaves of a gable roof, nor more than two feet above the face of the canopy or a parapet wall to which it is attached. Maximum length (ft) - (d) Sign may be as long as the building wall to which it is attached, and may wrap around a corner, but may not project beyond a corner.	**Consistent**	The applicant would include a sign meeting county sign requirements.

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
ARTICLE 11: Entitlements – Process and Procedures			
Sec. 8111-1.2.1.1 Permit Approval Standards	Conditional Use Permits may only be granted if all the following standards, notwithstanding subsection 'e' below, are met, or if such conditions and limitations, including time limits, as the decision-making authority deems necessary, are imposed to allow the standards to be met.		
	a. The proposed development is consistent with the intent and provisions of the County's General Plan and of Division 8 Chapter 1 (Non Coastal Zoning Ordinance) of the Ventura County Ordinance Code.	**Indeterminate**	Once Ventura County Air Pollution Control District has evaluated the project, the applicant has identified mitigation for air quality impacts, and Air Quality staff has evaluated the project's CEQA impacts, Air Quality staff would recommend air quality conditions of certification to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level. With the exception of Sec. 8109-3.1.3.a and Sec. 8111-1.2.1.1.d in the zoning code, the power plant, battery facility and transmission line are consistent with the intent and provisions of the general plan and zoning code as they are allowed with a Planning Commission-approved conditional use permit on General Industrial (M3) zoned land and the transmission line is allowed with a Planning Director-approved conditional use permit on Agricultural and Open Space Special Purpose zoned land. Until air quality impacts can be fully mitigated, the project's consistency with this standard is **indeterminate**.
	b. The proposed development is compatible with the character of surrounding, legally established development.	**Consistent**	The power plant and battery facility are proposed on an industrial property surrounded by other industrial uses in a zone identified as the heaviest manufacturing zone intended for uses not requiring highly restrictive performance standards for uses on adjoining

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
			properties. Transmission lines are compatible with agricultural and grazing land uses as the uses can continue under and around the transmission line.
	c. The proposed development would not be obnoxious or harmful, or impair the utility of neighboring property or uses.	**Consistent**	The power plant and battery facility are proposed in an industrial area in the heaviest manufacturing zone (M3). The transmission line would be compatible with the agricultural and open space land on which it is proposed. Noise and Vibration, Transmission Line Safety and Nuisance, and Visual Resources staff concluded that project impacts would be less than significant with the recommended conditions of certification.
	d. The proposed development would not be detrimental to the public interest, health, safety, convenience, or welfare.	**Indeterminate**	The project would be compatible with the surrounding land uses and consistent with the general plan land use designation and zoning designations. Hazardous Materials Management, Noise and Vibration, Public Health, Soil and Water Resources, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, and Worker Safety and Fire Protection staff have concluded that project impacts would be less than significant with the inclusion of recommended conditions of certification. Once Ventura County Air Pollution Control District has evaluated the project, the applicant has identified mitigation for air quality impacts, and Air Quality staff has evaluated the project's CEQA impacts, Air Quality staff would recommend air quality conditions of certification to reduce Mission Rock's direct and cumulative air quality impacts to a less than significant level. Until air quality impacts can be fully mitigated, the project's consistency with this standard is

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
			indeterminate.
	e. The proposed development, if allowed by a Conditional Use Permit, is compatible with existing and potential land uses in the general area where the development is to be located.	**Consistent**	The power plant and battery facility is proposed in the heaviest manufacturing zone (M3). The transmission line is not an extensive use of land with approximately 0.02 acres of farmland used for the transmission poles. Agricultural operations could be carried out under and around the transmission line.
	f. The proposed development will occur on a legal lot.	**Consistent**	The power plant and battery facility is proposed on a legal lot. The transmission line would be within a new easement. Easements are not lots and the creation of a new easement would not affect the minimum lot area of the parcel on which the easement would be established.
Sec. 8111-1.2.1.2 - Additional Standards for AE Zone	In addition to the provisions of Section 8111-1.2.1.1, before any permit is issued for any structure or land use which requires a discretionary permit in the AE Zone, the following standards shall be met or be capable of being met with appropriate conditions and limitations being placed on the use:		
	a. That the establishment or maintenance of this use will not significantly reduce, restrict or adversely affect agricultural resources or the viability of agricultural operations in the area;	**Consistent**	The transmission towers would take minimal land (0.02 acres) for the transmission poles. Agricultural operations could continue under and around the transmission line. A portion of the transmission line route diagonally bisects agricultural property, particularly between tower numbers 18 to 24 (5 towers, approximately 1 mile long). Pesticide application and irrigation operations may need to be rerouted around the transmission line. The lease of the land (transmission right-of-way) could help alleviate costs associated with possible rerouting of agricultural operations. Operation of the transmission line would require on-going periodic maintenance (tree trimming) in several areas along the route to ensure that trees and other tall vegetation do not interfere with the safe operation of the lines and conductors. Section

Applicable LORS	*Description*	*Mission Rock LORS Consistency*	
			8107-25.5 (e) allows for pruning and trimming of tree limbs and roots. See discussion under the "Article 7" subsection for the project's consistency with Section 8107-25.5 (e).
	b. That structures will be sited to minimize conflicts with agriculture, and that other uses will not significantly reduce, restrict or adversely affect agricultural activities on-site or in the area, where applicable; and	**Consistent**	The majority of the transmission line would be located parallel the property line or parallel with the edge of the agricultural field. The lease of the land (transmission right-of-way) could help alleviate costs associated with possible adjusting some agricultural operations
	c. That the use will be sited to remove as little land from agricultural production (or potential agricultural production) as possible.	**Consistent**	The transmission poles would take up approximately 0.02 acres of agricultural land. The transmission poles and lines would be located within a new 75 feet wide right-of-way leased from the property owners over which the transmission line crosses. Agricultural activities would be able to continue under (e.g. row crops) and around the transmission line. The lease of the land (transmission right-of-way) could help alleviate costs associated with possible adjusting some agricultural operations.
Sec. 8111-1.3 - Other Entitlements			
Sec. 8111-1.3.1 - Tree Permit	A ministerial or discretionary Tree Permit is required, pursuant to Sec. 8107-25 et seq., for the alteration of Protected Trees in all applicable Base Zones and Overlay Zones; see also Article 9. Ministerial Tree Permits shall be processed in the same manner as Zoning Clearances, and discretionary Tree Permits shall be processed in the same manner as Conditional Use Permits. A Tree Permit may be issued for the alteration of one or more Protected Trees as appropriate.	**Consistent**	Installation of the transmission line may require protected trees to be pruned or trimmed to ensure a ten foot clearance from the transmission line (line sag) and conductor for safe operation of the transmission line. Also if the location of the transmission line conflicts with a protected tree, the tree may need to be removed. Section 8107-25.5 (e) allows for pruning and trimming of tree limbs and roots. See discussion under the "Article 7" subsection for the project's consistency with Section 8107-25.5 (e).

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, §15065(a)(3)).The cumulative land use and planning analysis considers past, current, and probable future projects that are relatively near the proposed project that would contribute to cumulative impacts by impacting agricultural or forest lands, disrupt or divide an established community, conflict with applicable land use plans, policy or regulation, or conflict with an applicable habitat conservation plan or natural community conservation plan.

Land Use Table 6 displays the reasonably foreseeable significant sized development projects within approximately one mile of the project site and projects where agricultural land would be converted to non-agricultural uses in Ventura County. These projects listed below are considered in this land use cumulative impacts analysis.

Land Use Table 6
Cumulative Projects

ID	Project Title	Description	Location	Distance To Project (Miles)	Status
1	Todd Road Jail Evidence Storage Building, PL14-0125	Adjustment to conditional use permit (CUP) 4735-2 to authorize a 20,000 sq. ft. evidence storage building at the Todd Rd Jail.	600 Todd Rd, Santa Paula	0.38	Constructed
2	Todd Road Jail Medical Wing Expansion	60,000 sq. ft. of a medical wing.	600 Todd Rd, Santa Paula	0.38	Approved
3	Permit Adjustment to Authorize a One Year Time Extension for a Zoning Clearance for Construction (LU-11-0018)	Continued use of truck transportation operation and proposed new use of contractor's service and storage yard. Authorizes installation and use of storage racks, air compressor, cargo container, covered used oil storage tank, and storage enclosure. 1,000 gallon septic tank installation as part of the septic system to provide sewage disposal services for 1200 sq. ft. building. Domestic water provided by City of Santa Paula Water Works.	734 Mission Rock Road, Santa Paula	0.57	Approved. Zoning clearance issued Jan 2017. Building permits not pulled yet.
4	Santa Paula West Business Park Specific Plan (SPWBPSP), 3-CDP-04	Mixture of light manufacturing, research and development, professional office and supporting commercial uses. Proposed on 53-acres of agricultural land.	Telegraph Rd & Beckwith Rd, Santa Paula	1.93	Proposed
5	Calpipe Phase 2, 13-CDP-05	New 30,000 sq. ft. industrial building.	957 Calpipe Rd, Santa Paula	2.02	Under Construction
16	Parklands Specific Plan and Tentative Map, PROJ-4222	California Department of Fish and Wildlife Lake and Streambed Alteration Agreement No. 1600-2014-0170-R5. Alteration of Brown Barranca in the construction of Parklands Development Project (499 residential units, several park spaces on 66.7 acres) in 4 phases.	Southwest of Telephone Rd and Wells Rd intersection, Ventura	3.27	Under Construction
17	Parklands Apartments, PROJ-4222	173 apts. 3 stories with a community building.	Southwest corner of Wells and Telegraph Rd, Ventura	3.29	Under Construction
20	Westwood/Parklands, PROJ-03829	216 detached homes, 110 attached homes.	Southwest corner of Wells Rd and	3.36	Under Construction

			Telegraph Rd, Ventura		
21	Rancho Verde Farmworker Housing, PROJ-10410	24 farmworker housing apartment units, 2 stories.	Saticoy Ave and Blackburn Rd, Ventura	3.54	Approved
23	The Farm (Residential), PROJ-8446	131 single family homes, 34 townhomes, 2 parks and 3 mini parks.	Southeast corner of Telegraph Rd and S Saticoy Ave, Ventura	3.64	Approved
33	Limonera Company - East Area 1 Specific Plan Amendment	501-acre site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2-acres of civic uses for school facilities, and 225.3-acres open space and park uses.	Telegraph Rd. and Padre Ln (east of Santa Paula Creek), Santa Paula	5.04	Construction would occur continuously during 10-year period. Development of four phases based on market conditions. In design stage (specific maps). Designing Phase 1. Preliminary for multi-family units submitted in March/April 2017. Halllock Center Area portion of site (SE) developed portion. Tree removal, grading. Construction start date unknown.
35	CUP Agricultural Contractor Service and Storage Yard, PL15-0146	Development of 5-acre property with 5,000 sq. ft. ag service building, 6,250 sq. ft. ag building, 100 sq. ft. pump house, two fire suppression holding tanks, two 10,000 gallon domestic water holding tanks, 156,788 sq. ft. of impervious/paved area for truck and equipment staging and storage, and 16,925 sq. ft. of landscaping. Water provided by onsite well and waste water discharged into septic mound system. Accessory office spaces proposed in both buildings	4300 Santa Clara Ave, Oxnard	5.36	Approved- plans in review with building and safety division
36	Garden Acres Mutual Water Company	Continued use of existing water supply, storage and distribution system for a period of 40 yrs.; installation of	Friedrich Road between Nyeland	5.75	Approved

	Minor Modification and Conditional Certificate of Compliance to CUP (Case No. LU06-0019)	water transmission and storage facilities; and approval of a Conditional Certificate of Compliance to create legal lot for Tax Assessor's Parcel 149-0-041-185.	Ave and Orange Dr, Oxnard		
39	North Pleasant Valley (NPV) Treatment Facility	Construction and operation of groundwater treatment facility, including drilling and production of two new wells, installation of pipelines for distribution of raw well water, product water and brine. Facility to provide treated water to Camarillo's existing service area, with average design capacity of 7,500 acre ft. per yr. of production water.	Las Posas Rd and Lewis Rd, Camarillo	6.68	Phase 1- design phase 2016/2017 and approval for ground water extraction of 4,500 acre feet per year Project approved by city of Camarillo. Phase 2 expected early 2018 with drilling of wells

The following land use areas have been analyzed with regard to cumulative land use impacts.

AGRICULTURE AND FOREST RESOURCES

The project would have a minimal impact on agricultural land with the transmission poles taking up approximately 0.02 acres of agricultural land. There is no forest land in the project area. The project would not have significant impacts that would extend beyond the property boundary on which the poles are proposed, that would result in the conversion of farmland to non-farmland uses. The project would have a **less than significant** impact under this criterion. The project would have a minimal contribution to cumulative impacts related to this land use criterion.

PHYSICAL DIVISION OF AN ESTABLISHED COMMUNITY

The proposed Mission Rock site and construction parking and laydown area would be located within an industrial park on land zoned as Existing Community. Other land uses in the community include an asphalt and concrete processing facility, automobile dismantling facility, and vehicle storage and repair yards. Mission Rock would be compatible with the existing land uses within the community in which it is proposed.

There would not be a need to relocate any residences as a result of the project. Therefore, Mission Rock would not physically divide or disrupt any community within the study 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. Also, the project would not displace existing development. The transmission lines would not cross an established community and the natural gas and recycled-water pipelines would be installed underground. The project would have **no impact** under this criterion. Because Mission Rock would have no impact under this criterion, the project would not contribute to a cumulative impact under this criterion.

CONFLICT WITH AN APPLICABLE HABITAT OR NATURAL COMMUNITY CONSERVATION PLAN

The Mission Rock site, construction parking and laydown area, and associated transmission line and linears are not located within any Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP). The project would have **no impact** under this criterion. Because Mission Rock would have no impact under this criterion, the project would not contribute to a cumulative impact under this criterion.

CONFLICT WITH AN APPLICABLE LAND USE PLAN, POLICY, OR REGULATION

Staff concludes that the project would be consistent with the policies and land use designations of the Ventura County General Plan and the uses in the Ventura-Santa Paula Greenbelt. With the exception to Section 8109-3.1.3.a, Section 8111-1.2.1.1.a and Section 8111-1.2.1.1.d, the project would be consistent with the uses, requirements, and standards in the Ventura County Non Coastal Zoning Code. Once air quality impacts have been fully mitigated, the project would have a less than significant impact under this criterion and the project would have a minimal contribution to cumulative impacts related to this land use criterion. Until the air quality impacts are fully

mitigated, the project's consistency with the applicable standards in the Ventura County Non Coastal Zoning Code is **indeterminate** as is the level of significance under this criterion.

ENVIRONMENTAL JUSTICE

Environmental Justice Figure 1 shows the presence of an environmental justice (EJ) population based on race and ethnicity within a six-mile radius of the project site. **Environmental Justice Figure 2** and **Table 3** show that the below-poverty-level population in Santa Paula Census County Division and population receiving free or reduced price meals in the Rio Elementary School District and Somis Union School District constitute an EJ population based on low income.

A disproportionate land use impact on an EJ population could occur if a project would physically divide the established community of an EJ population or if a project in proximity to an EJ population conflicts with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating environmental impacts on a population. The primary purpose of planning is to protect the public health, safety, and welfare. Incompatible land uses may create health, safety, and welfare issues for the community. An example of land use incompatibility is residential, childcare, and school uses in proximity to industrial facilities and other uses that, even with the best available technology, would contain or produce materials that because of the quantity, concentration, or physical or chemical characteristics, pose a significant hazard to human health and safety (OPR 2015).

The Ventura County Non Coastal Zoning Code echoes this purpose. It was adopted to promote the public health, safety and general welfare; to provide the environmental, economic and social advantages which result from an orderly, planned use of resources; to establish the most beneficial and convenient relationships among land uses; and to implement Ventura County's General Plan (Ventura Co 2016a).

There are EJ populations nearby the Mission Rock site and adjacent to and nearby the transmission line, but not in close proximity. The closest residence in an EJ area is approximately one mile east of the power plant. The residence is in an industrial zoned area. Staff concludes the project would not divide an existing community as the project is proposed on land zoned as industrial within an industrial zoned area; however, staff could not determine whether the project would conflict with applicable land use plans, policies, or regulations, until air quality impacts are fully mitigated.

Staff in the technical areas of Noise and Vibration, Public Health, and Soil and Water Resources concludes that the project would not pose a significant individual or cumulative hazard to health and human safety with the incorporation of recommended conditions of certification. However, as air quality impacts are not fully mitigated, siting the project where it is proposed could create a land use incompatibility and could disproportionately affect the EJ population. Once air quality impacts are fully mitigated, the land use impacts from the project on the EJ population would likely be less than significant. Land use impacts on the EJ population and whether the impact would be disproportionate are **indeterminate**.

NOTEWORTHY PUBLIC BENEFITS

There are no noteworthy public benefits associated with land use.

CONCLUSIONS AND RECOMMENDATIONS

Staff concludes the proposed Mission Rock project and associated linears:

- Would convert a minimal amount of farmland (as classified by the Farmland Mapping and Monitoring Program) to non-agricultural 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 result in changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.
- Would not physically divide an established community.
- Could conflict with the Ventura County Non Coastal Zoning Code as the project's consistency with three sections of this code is **indeterminate**.[9]
- Would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, with the exception of the Ventura County Non Coastal Zoning Code, (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Would not conflict with any applicable habitat 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.
- Would have a less than significant land use impact on the EJ population with no disproportionate impacts.

PROPOSED CONDITION OF CERTIFICATION

Staff does not recommend any conditions of certification for land use.

[9] Once air quality impacts are fully mitigated, the project would be consistent with the Ventura County Non Coastal Zoning Code and the project would not conflict with any applicable land use plan, policy, or regulation.

REFERENCES

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CAL 2016a – Calpine Company (TN210540-2). Application for Certification Supplemental, Mission Rock Energy Center project, Air Quality. February 26, 2016

CEC 2016i – California Energy Commission (TN 215102) Report of Conversation; ROC regarding Noise & Vibration between Christopher Dennis with CEC staff and Winston Wright with Ventura County Planning Division. December 22, 2016

CEC 2017d – California Energy Commission (TN 216945) Record of Conversation; ROC w/ Doug Davy (CH2MHill) regarding average number of operations employees and lowest conductor height on H-poles. April 7, 2017

CEC 2017f – California Energy Commission (TN 216969) Record of Conversation; ROC email between CEC staff Scott Polaske and Steve DeGeorge of Ventura County Transportation Commission re: Santa Paula Branch Line right-of-way. March 14, 2107

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Ventura Co 2006 – Board of Supervisors, County of Ventura, California, Ordinance Number 4338, Ordinance Adopting the Ventura-Santa Paula Greenbelt and Amendment to Boundaries, February 14, 2006, <http://vcrma.org/planning/programs/greenbelts/index.html>.

Ventura Co 2011 – Ventura County Subdivision Ordinance, Last amended June 28, 2011, <http://www.vcrma.org/planning/pdf/zoning/Subdiv_Ord.pdf>.

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Ventura Co 2015b – Ventura County General Plan, Adopted 1988, Last amended 2015, http://www.vcrma.org/planning/pdf/plans/Goals-Policies-and-Programs.pdf.

Ventura Co 2015c – County of Ventura Assessor's Office, Assessor's Parcel Map, accessed June 22, 2016, <http://assessor.countyofventura.org/research/mappage.asp>.

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Ventura CO 2016b – County of Ventura Measure (SOAR) Save Open-space and Agricultural Resources Initiative – 2050, November 2016, <http://vcrma.org/planning/ordinances/index.html>.

NOISE AND VIBRATION

Christopher Dennis and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

If built and operated in conformance with the proposed **Noise and Vibration** conditions of certification, Mission Rock Energy Center (Mission Rock) would comply with all applicable noise and vibration laws, ordinances, regulations, and standards (LORS) and would produce no significant direct or cumulative adverse noise impacts on people within the project area, including the environmental justice population.
Staff retains the responsibility to monitor the enforcement of the **Noise and Vibration** conditions of certification. Staff would work under the authority of the California Energy Commission's compliance project manager (CPM) to monitor and review the reporting of project performance during construction and the full term of operation, including facility closure.

INTRODUCTION

The construction and operational activities associated with any power plant can create both noise, or unwanted sound, and vibration. The character and loudness of the noise, the times of day or night it is produced, the duration and frequency of the occurrence of the noise, and the proximity of the facility to noise-sensitive receptors all combine to determine whether the facility would meet applicable noise control LORS and whether it would cause significant adverse noise impacts.

This analysis identifies and examines the noise and vibration impacts that would occur during construction and operation of Mission Rock. In this analysis, staff recommends procedures to ensure that such impacts are adequately mitigated to comply with applicable LORS and lessen the adverse impacts to less than significant.

For an explanation of technical terms used in this analysis, please refer to **NOISE APPENDIX A** at the end of this **Noise and Vibration** section. For assessment and mitigation of potential noise impacts to wildlife, please refer to the **Biological Resources** section of this staff assessment.

SETTING

Mission Rock would be located on a 9.8-acre parcel in an area that is zoned industrial and is currently used for recreational vehicle and boat storage (CAL 2015a). Mission Rock would operate as a simple-cycle power plant with onsite battery storage and synchronous condenser capability (CH2M 2016e). The battery storage and the synchronous condenser would operate during times of grid over-generation. Grid over-generation normally occurs during the daytime (7 am to 7 pm) due to photovoltaic electricity loading on the grid. The battery storage and the synchronous condenser are not expected to operate during the nighttime (10 pm to 7 am) (CH2M 2016e). Adjacent and nearby land use includes asphalt and concrete recycling (operated by Granite Construction Company), agriculture, open space, automobile dismantling and salvage, and equipment storage for oil field operations. Approximately 0.18-mile to the west of

the Mission Rock site is the Todd Road Ventura County Jail.

Noise-sensitive land uses are residential dwellings, schools, hospitals, nursing homes, churches, and libraries (Ventura County 2011). Two residential dwellings (noise-sensitive receptors) are located near the Mission Rock site. These dwellings are approximately 1,125 feet to the east of this site, adjacent to the asphalt plant and concrete recycling facility, and are labeled R1a and R1b in **Noise and Vibration Figure 1** at the end of this **Noise and Vibration** section. R1a is a conforming land use as a principal residential dwelling, and R1b is a non-conforming land use as a principal residential dwelling in industrial zoned property (CEC 2016i). A corrugated-metal fence is installed on the southeast property boundary of the granite recycling construction property, adjacent to R1a. R1b has a barrier wall extending the length of its southwestern property boundary. Both barriers lie between the dwellings and the Mission Rock site.

Approximately 941 feet to the northeast of the Mission Rock site is a pet caretaker dwelling at the Carl's Pet Care Center, labeled R2 in **Noise and Vibration Figure 1** (CAL 2015a). Land use at R2 is industrial zoned, permitted, non-conforming with a caretaker employee (CEC 2016i). The county does not consider the caretaker dwelling noise-sensitive because it is accessory to an industrial use (Ventura County 2012). With regard to Carl's Pet Care Center, the county states that dwellings for caretakers of industrial sites are not considered "noise sensitive" and are expected to be subject to noise levels that are typical of industrial sites, which are generally higher than those experienced within residentially-developed areas (Ventura County 2012). A barrier wall has been constructed along the western and southern property boundary between this property and the Mission Rock site.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Noise Table 1 Below identifies the Noise and Vibration LORS related to Mission Rock.

Noise Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description	Consistency with Mission Rock
Federal: Occupational Safety & Health Act (OSHA), Title 29, Code of Federal Regulations, § 1910.95 U.S. Environmental Protection Agency Guidelines Federal Transit Administration	Protects workers from the effects of occupational noise exposure. Assists state and local government entities in development of state and local LORS for noise. Establishes thresholds for ground-borne vibration associated with construction of rail projects; also applied to other types of projects.	Conditions of Certification **NOISE-3** (employee noise control program), **NOISE-5** (occupational noise survey), and **NOISE-7** (pile driving/vibration mitigation)
State: California Government Code, § 65302(f) State of California, Office of Noise Control, Model Community Noise Control Ordinance California Occupational Safety & Health Act (Cal-OSHA): Title 8, California Code of Regulations, §§ 5095-5099 (Article 105) California Department of Transportation (Caltrans), Transportation and Construction Vibration Guidance Manual	Encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan. Provides guidance for acceptable noise levels in the absence of local noise standards. Protects workers from the effects of occupational noise exposure. Establishes guidelines for assessing the impacts of ground-borne vibration associated with pile driving.	Conditions of Certification **NOISE-3** (employee noise control program), **NOISE-4** (noise restriction consistent with local LORS), and **NOISE-5** (occupational noise survey)
Local: County of Ventura Construction Noise Threshold Criteria and Control Plan Ventura County General Plan, Chapter 2.16, Noise	Provides noise limit requirements for construction work. Provides noise limits for ongoing noise generators.	Conditions of Certification **NOISE-6** and **NOISE-7** (construction noise restrictions) and **NOISE-4** (operational noise restrictions and survey)

FEDERAL

Under the Occupational Safety and Health Act of 1970, the Department of Labor, Occupational Safety and Health Administration (OSHA) adopted regulations Title 29 § 1910.95, designed to protect workers against the effects of occupational noise exposure.

These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **NOISE APPENDIX A, Noise Table A4** at the end of this section). The regulations further specify a hearing protection program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

Guidelines are available from the U.S. Environmental Protection Agency to assist state and local government entities in developing state and local LORS for noise, but these guidelines are not applicable because there are existing local LORS that apply to this project.

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the threshold of architectural damage for conventional sensitive structures is a peak particle velocity of 0.2 inches per second (in/sec).

STATE

California Government Code § 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The State of California, Office of Noise Control, prepared the Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. This model also defines a simple tone, or "pure tone," as one-third octave band sound pressure level that can be used to determine whether a noise source contains annoying tonal components. The Model Community Noise Control Ordinance further recommends that when a pure tone is present, the applicable noise standard should be lowered (made more stringent) by five A-weighted decibels (dBA). This is consistent with the definition in **NOISE APPENDIX A**, **Noise Table A1**, last row, in this analysis.

The California Occupational Safety and Health Administration (Cal-OSHA) has adopted occupational noise exposure regulations (California Code of Regulations Title 8 §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards (see **NOISE APPENDIX A**, **Noise Table A4**).

In September 2013, California Department of Transportation (Caltrans) released the Transportation and Construction Vibration Guidance Manual, available at http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf. This manual includes the FTA method and findings. For pile driving impacts, the manual uses a method based on the force of the pile driver as well as soil considerations in the calculation of vibration levels. Because the analysis in the Caltrans manual is more robust than the FTA's analysis, staff uses Caltrans' vibration criteria for pile driving associated with power plants. The Caltrans manual states that for construction activities that generate vibration, e.g., pile driving, the threshold of human response begins at a peak particle velocity of 0.16 in/sec. This is characterized by Caltrans as a "distinctly perceptible" event with an incident range of transient to continuous (Caltrans Transportation and Instruction Vibration Guidance Manual, September 2013. Report No. CT-HWANP-RT-13069.25.3, Table 20).

LOCAL

Ventura County LORS

The project is located in an unincorporated area within Ventura County. The noise LORS applicable to noise-sensitive receptors R1a and R1b are the County of Ventura Noise Threshold Criteria and Control Plan (Ventura County 2010) and the Ventura County General Plan (Ventura County 2013). R1a and R1b are represented by monitoring location M1 in **Noise and Vibration Figure 1**.

Construction

Construction noise criteria take into account the existing noise environment, the time-varying noise during the various phases of construction activities, the duration of the construction, and the adjacent land use. Specific construction noise limits for noise-sensitive locations are not currently specified in the General Plan or administrative code of the County of Ventura. The County of Ventura Construction Noise Threshold Criteria and Control Plan limits construction for noise receptors during sensitive times (Ventura County 2010). Human receptor locations considered time sensitive are listed below in **Noise Table 2**.

Noise Table 2

The County of Ventura Construction Noise Threshold Criteria and Control Plan[1,2] Receptor Location	Typical Sensitive Time Period
Hospitals, Nursing Homes (quasi-residential)	24 hours
Single-Family and Multi-Family Dwellings (residential)	Evening/Night
Hotels/Motels (quasi-residential)	Evening/Night
Schools, Churches, Libraries (when in use)	Daytime/Evening

1. Ventura County 2010.
2. Emergency construction work is exempt from these construction noise thresholds.

As shown in **Noise Table 2**, the County of Ventura Construction Noise Threshold Criteria and Control Plan generally does not consider residences as noise-sensitive receptors during the daytime, defined as 7 am to 7 pm Monday through Friday, and from 9:00 a.m. to 7:00 p.m. Saturdays, Sundays, and local holidays. Industrial and agricultural businesses are not considered noise-sensitive receptor locations at any time (Ventura County 2010).

Operation

Noise-sensitive land uses are dwellings, schools, hospitals, nursing homes, churches, and libraries (Ventura County 2011). Ventura County General Plan, Hazards Appendix, Chapter 2.16 Noise (County of Ventura 2013), specifies the following (long-term) exterior noise limits for noise-sensitive receptors, which staff uses to establish the project's LORS-related operational thresholds at monitoring location M1.

- Between 6 a.m. and 7 p.m., the greater of 55 dBA hourly L_{eq}, or the existing ambient hourly L_{eq} plus 3 dBA.
- Between 7 p.m. and 10 p.m., the greater of 50 dBA hourly L_{eq}, or the existing ambient hourly L_{eq} plus 3 dBA.
- Between 10 p.m. and 6 a.m., the greater of 45 dBA hourly L_{eq}, or the existing ambient hourly L_{eq} plus 3 dBA.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and either eliminated or mitigated to the extent feasible. Section XII of Appendix G of CEQA's guidelines (California Code of Regulations, Title 14, Appendix G) describes some characteristics that could signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

2. exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels;

3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Staff, in applying Item 3 above to the analysis of this and other power plant projects, believes that an increase in background noise levels up to and including 5 dBA is less than significant, and an increase of above 5 dBA could be either significant or less than significant depending upon the circumstances of a particular case. For example, a significant impact may exist where the noise of the project plus the background exceeds the nighttime background level by more than 5 dBA at residential communities. Factors staff considers in determining if the noise is significant or not, are:

1. the resulting noise level[1];
2. the character of the noise;
3. the time the noise is produced (day or night);
4. the duration and frequency of occurrence of the noise; and
5. the land use designation of the affected receptor site and the type of receptor (residential, commercial, etc.).

In addition, noise due to construction activities is usually considered to be less than significant in terms of CEQA compliance if:

- the construction activity is temporary; and
- the use of heavy equipment and activities causing high levels of noise are limited to daytime hours.

DIRECT IMPACTS AND MITIGATION

To evaluate impacts to the project's noise-sensitive receptors, R1a and R1b, project noise is compared with measured ambient noise levels. Staff uses methods and thresholds discussed above to evaluate the project's noise impacts on the project area's populations, including the environmental justice population. For the evaluation of noise impacts on wildlife receptors, please see the **Biological Resources** section of this staff assessment.

Ambient Noise Monitoring

To establish a baseline for the comparison of predicted project noise with existing ambient noise, the applicant conducted a long-term ambient noise survey on Wednesday and Thursday, October 7 to 8, 2015 and provided the results in the AFC (CAL 2015a, § 5.7). In addition, the applicant provided an operational sound contour map in a Data Response (CAL 2016b). Weather conditions during the survey were clear and sunny, temperatures ranging between 60^{o}F and 90^{o}F, and humidity between 25 to 85 percent (CAL 2015a). The noise survey was performed using appropriately calibrated sound-recording equipment and industry-accepted standards and techniques.

[1] For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. In this case, if the project creates an increase in ambient noise no greater than 10 dBA, the project noise level may not be significant if the resulting noise level does not exceed 40 dBA.

The noise survey monitored existing noise levels at the locations identified in **Noise Table 3** below. This table also includes a summary of the measurement results.

Noise Table 3
Ambient Noise Summary[2]

Monitoring Location (Receptor)	Description	Distance to Mission Rock Property Line (feet)	Hourly Leq dBA Daytime (6 am to 7 pm)	Hourly Leq dBA Evening (7 pm to 10 pm)	Hourly Leq dBA Nighttime (10 pm to 6 am)	Nighttime L90 (10 pm to 6 am)[3]
M1 (R1a, R1b)	Northeast side of fence surrounding Granite Construction	1,125	55	43	50	43

Construction Impacts and Mitigation

Construction noise is normally considered a temporary phenomenon. Construction of Mission Rock would last approximately 23 months (CAL 2015a, § 2.1). Because construction noise typically varies with time, it is most appropriately measured by and compared with the equivalent sound level, or L_{eq} metric. In general, L_{eq} noise levels from construction activities average about 86 dBA L_{eq} at 50 feet from the noise source (Mission Rock 2015, Table 5.7-7). Using this range, the average construction noise level at monitoring location M1 would be about 59 dBA L_{eq}.

LORS Compliance

Construction activities for Mission Rock would occur during the daytime, 7 am to 7 pm, and possibly Saturdays, Sundays, and local holidays, from 9 a.m. to 7 p.m. in accordance with the County of Ventura construction activity requirement (CAL 2015a, § 5.7.6.3; Ventura County 2010). To ensure that this requirement is met, staff recommends Condition of Certification **NOISE-6** to restrict noisy activities to daytime only.

As shown in **Noise Table 2**, the county's control plan does not consider residences as noise-sensitive receptors during the daytime. Thus, the plan's thresholds do not apply to residences R1a and R1b represented by monitoring location M1. The control plan considers schools, hospitals, nursing homes, churches, and libraries as noise-sensitive receptors during the daytime but no such facilities exist in the vicinity of the project site.

CEQA Impacts

The construction noise level of 59 dBA L_{eq} at monitoring location M1 combined with the existing average daytime ambient of 55 dBA L_{eq} at this location (from **Noise Table 3**), results in 60 dBA hourly L_{eq}, 5 dBA above ambient noise at M1. This increase would be within the range staff considers less than significant. Furthermore, because the noise would be generated during the day and would be temporary in nature, the impact would not be considerable.

[2] Existing baselines are averaged from CAL 2015a, Tables 5.7-4 and 5.7-5.

[3] The nighttime 10 p.m. to 6 a.m. L90 is used to derive this level instead of the L90 for the four quietest hours staff normally uses, because of the predominantly industrial/agricultural land use in which the project is sited and its relative isolation from populated residential areas.

To ensure construction noise does not significantly impact human receptors at M1, staff recommends Conditions of Certification **NOISE-1**, **NOISE-2**, and **NOISE-6**. **NOISE-1** and **NOISE-2** would establish a public notification and noise complaint process to resolve any complaints regarding construction noise. **NOISE-6** would require construction work to be performed in a manner to ensure the potential for noise complaints are reduced as much as practicable and it restricts construction to daytime hours.

Farm workers may be present in the agricultural field approximately 100 feet west of the project site. Construction work would increase the existing ambient noise levels in this area. However, restrictions on construction activities described in Conditions of Certification **NOISE-6** and **NOISE-7** (Pile Driving Management) would reduce the impact. In addition, these workers would be protected through their employer's OSHA requirements for hearing protection and Condition of Certification **NOISE-1** requires the project owner to notify the farm workers' employer of the start of construction.

Linear Facilities

Mission Rock proposes to install a new electrical transmission line, natural gas pipeline, and recycled water pipeline (CAL 2015a, §§ 2.1.7, 2.1.9, 2.1.15, 4.0). Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than two or three days. Furthermore, to minimize any potential impacts to noise-sensitive receptors, staff recommends limiting construction of linear facilities to daytime hours in accordance with Condition of Certification **NOISE-6**. Therefore, installation of the linear facilities would not result in a significant impact.

Pile Driving

Pile driving using traditional techniques could be expected to reach 101 dBA at a distance of 50 feet. The range of pile driving noise at monitoring location M1 would be approximately 74 dBA. This level exceeds the ambient level at M1 by 19 dBA (see **Noise Table 3**, 4th column [daytime ambient L_{eq}]). Therefore, pile driving using traditional techniques can potentially cause a significant noise impact at the nearest noise-sensitive receptor. However, several best management methods are available for reducing noise and vibration generated by traditional pile driving. These methods include: (1) the use of pads or impact cushions of plywood; (2) dampened driving, which involves some form of blanket or enclosure around the hammer; and (3) the use of vibratory drivers. These methods can be effective in reducing the noise by 8 dBA to15 dBA as compared to unsilenced pile drivers.

To ensure that pile driving noise would be controlled and this work would be performed in a manner to reduce the potential for any noise complaints, staff proposes Condition of Certification **NOISE-7**. **NOISE-7** would require the project owner to perform pile driving in a manner to reduce the potential for any project-related noise complaints. Also, **NOISE-6** would limit pile driving to daytime hours.

Vibration

The only construction work likely to produce vibration that could be perceived off site would be pile driving. Pile driving would be required for construction of Mission Rock (CAL 2015a, § 5.7.3.2). The Caltrans measure of the threshold of distinct perception

begins at 92 vibrational decibels, which correlates to a peak particle velocity of about 0.16 in/sec (inches per second). This threshold is quite high and staff believes it has not been reached offsite by any past power plant's pile driving work. **NOISE-7** would require public notification of the work and ensure that pile driving is conducted in a manner to reduce the potential for any noise and vibration complaints.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized the applicable LORS that would protect construction workers (OSHA and Cal-OSHA LORS, see **Noise Table 1**) (CAL 2015a Table 5.7.6, § 5.7.6). To ensure that construction workers are, in fact, adequately protected in accordance with these LORS, staff proposes Condition of Certification **NOISE-3**.

Operation Impacts and Mitigation

The primary operational noise sources of the Mission Rock project would include the gas turbine air inlet, gas turbine generator, selective catalytic reduction (SCR) module, exhaust-air stack, gas compressor, electric transformer, chiller, and some pumps, piping, and valves. Operation of the battery energy storage and synchronous condenser would not increase operational noise generated by Mission Rock (CH2M 2016e).

The batteries would draw electricity directly from the electricity grid in times of over-generation, when most Mission Rock noise-producing equipment, the simple-cycle units, are not in operation (CH2M 2017b). The simple-cycle units are anticipated to operate during times when the grid is in peak demand (under-generation). Therefore, the simple-cycle units would likely not operate concurrently with the battery system. In this mode, noise attributable to operation of Mission Rock from operation of the batteries would be 5 to 10 dBA lower at monitoring location M1 than when the simple-cycle units are in operation.

During synchronous condenser operation, the generator would be acting as a motor or "load" on the grid and would not generate electricity. For synchronous condenser operation, the combustion turbines could be started and operate until the generator synchronizes with the grid, at which time the combustion turbine would be immediately shut down (CH2M 2017b). In this mode, noise attributable to operation of Mission Rock would be 5 to 10 dBA lower at monitoring location M1 than with the simple-cycle units in operation.

To reduce noise generated by operation of Mission Rock, the following are examples of effective mitigation measures that may be considered by the applicant and that are typically implemented for simple-cycle power plants:

- turbine inlet-air and ventilation silencing;
- turbine generator enclosure;
- transformer blast walls;
- exhaust-air stack silencing;
- acoustical shrouding of SCR transition duct;

- increasing the thickness of the SCR plate steel;
- silencers, barriers, lagging, and partial or full enclosures for auxiliary equipment and piping;
- low-noise fans, motors, and vales; and,
- additional noise barriers at specific locations on the property line or near equipment (such as the SCR inlet, expansion joint or various equipment skids).

Compliance with LORS

The applicant used a sound model to predict the project's operational noise levels based on sound propagation factors adopted under the international standards organization's standard 9613-2, Acoustics - Sound Attenuation during Propagation Outdoors (CAL 2015a, § 5.7.3.3). This is an acceptable industry standard. The project's loudest operational noise level (CAL 2015a) at monitoring location M1 is tabulated in **Noise Table 4** below and compared to the county limits.

Noise Table 4
Predicted Operational Noise Level at Sensitive Receptors and LORS Limits

Monitoring Location (Receptor Location)	Noise Type	Daytime Hourly Leq (dBA)	Evening Hourly Leq (dBA)	Nighttime Hourly Leq (dBA)
		6 am to 7 pm	7 pm to 10 pm	10 pm to 6 am
M1 (R1a, R1b)	County fixed limit (L_{eq})	55	50	45
	Ambient	55	43	50
	3 dBA increase over Ambient	58	46	53
	Compliance limit (County fixed limit or 3 dBA over ambient, whichever is greater)	58	50	53
	Plant contribution	49	49	49
	Compliance with LORS?	**Yes**	**Yes**	**Yes**

As shown in **Noise Table 4**, operational noise at M1 would comply with the county noise LORS. To ensure that the project operation would not exceed the county LORS noise criteria, staff recommends Condition of Certification **NOISE-4**. **NOISE-4** would require an operational noise survey to ensure project compliance with the 49 dBA limit and to ensure that project operation would not cause a significant impact to noise-sensitive human receptors. Staff also recommends Conditions of Certification **NOISE-1** and **NOISE-2** that establish a public notification and noise complaint process and require the project owner to resolve any complaints that may be caused by operational noise. With implementation of these conditions of certification, noise due to project operation would comply with the applicable LORS.

CEQA Impacts

Power plant operational noise is steady in nature, as opposed to the intermittent and variable nature of noise from construction. Thus, it tends to define the background noise level. For this reason, staff typically compares power plant operational noise to existing ambient background noise levels at affected sensitive receptors. If this comparison identifies a significant adverse impact, feasible mitigation must be applied to the project to either reduce or remove that impact.

Mission Rock is expected to operate as an intermediate load and peaking facility, operated primarily in the daytime and evening (6 am to 10 pm). It is expected to rarely operate at night (10 pm to 6 am), when nearby noise-sensitive receptors could be impacted if the noise impacts are left unmitigated. For these receptors, staff evaluates project noise by comparing it with nighttime ambient background noise. Staff uses the average of the nighttime hourly background noise level in terms of the L_{90} metric (the noise level that's exceeded 90 percent of the time) to arrive at a reasonable baseline for comparison with the project's predicted noise level. Staff regards an increase of up to and including 5 dBA above ambient noise as a less-than-significant impact (see **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE** above). **Noise Table 5**, below, compares the project's operational noise level with the ambient nighttime noise levels.

Noise Table 5
Predicted Operational Noise Level at Sensitive Receptors and CEQA Limits

Monitoring Location (Receptor Location)	Operational Noise Level (dBA)	Nighttime Ambient L90 (dBA)[2]	Combined, Ambient Plus Project (dBA)	Change (dBA)
M1 (R1a, R1b)	49	43	50	+7

[2] From Noise Table 3

As shown in **Noise Table 5**, operational noise at monitoring location M1 would result in a 7 dBA increase in the nighttime ambient level; a potentially significant increase. While nighttime project operation may be likely, full operation of the project at night, resulting in noise levels as high as 49 dBA at M1 would be very rare. Thus, project operation would not cause a significant noise impact at the project's noise-sensitive receptors. **NOISE-4** would require an operational noise survey to ensure project compliance.

Tonal Noises

One possible source of nuisance could be strong tonal noises from power plant equipment. Tonal noises are individual sounds (such as pure tones) which, while may not be louder than permissible levels, stand out in sound quality, such as high-pitched sounds. The applicant plans to address overall noise in project design, and to respond appropriately, as needed, to eliminate tonal noises as possible sources of public complaints (CAL 2015a, § 5.7.3.3). To ensure that tonal noises do not cause public

nuisance, staff proposes Condition of Certification **NOISE-4**, which would require mitigation measures, if necessary, to ensure the project would not create tonal noises.

Linear Facilities

Mission Rock proposes to install a recycled water supply pipeline, a natural gas pipeline, and new electrical transmission lines (CAL 2015a, §§ 2.1.7, 2.1.9, 2.1.15, 4.0). No other new linear facilities are required for the project. Water and natural gas pipelines are usually underground and therefore silent during power plant operation.

Noise effects from electrical transmission lines typically do not extend beyond the lines' right-of-way easements. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV or higher. Mission Rock's electrical transmission lines would be only 230 kV, and thus, they are not expected to create audible noise. For more discussion, see the **Transmission Line Safety and Nuisance** section of this staff assessment.

Therefore, there would be no significant impact from the operation of linear facilities.

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 Mission Rock that would have the potential to create vibration would consist of high-speed gas turbines and electric generators, the natural gas compressor, and various pumps. All of these pieces of equipment are carefully balanced in order to operate properly and permanent vibration sensors are attached to the turbines and generators. Modern power plants using today's gas turbine technologies, similar to the proposed Mission Rock project, have not resulted in vibration impacts. Ground-borne vibration from the Mission Rock project would be undetectable by any offsite receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves, and can shake the walls of lightweight structures. The Mission Rock's chief source of airborne vibration would be gas turbine exhaust air. In a power plant such as Mission Rock, however, the exhaust must pass through the SCR module and stack silencer before it reaches the atmosphere. The SCR and stack silencer act as efficient mufflers and significantly reduce airborne vibration. Thus, the project would not cause airborne vibration effects that would be perceived offsite.

Worker Effects

The applicant acknowledges the need to protect power plant operating and maintenance workers from noise hazards and has committed to compliance with all applicable LORS (OSHA and Cal-OSHA LORS, see **Noise Table 1**) (CAL 2015a, §§ 5.7.6, 5.7.6.1, 5.7.6.2, 5.7.3.2, 5.7.3.3). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required and provided. To ensure that plant operating and maintenance workers are adequately protected in accordance with these LORS, staff proposes Condition of Certification **NOISE-5**.

Effects of Topography and Weather on Noise

In a research paper submitted to the Energy Commission by a member of the public and docketed on September 6, 2016 (Renterghem and Bottledooren 2007, TN213512), was a noise study conducted in the Austrian Alps to evaluate the accuracy of a noise model to predict noise levels. The model accounted for undulation of the terrain and an inhomogeneous atmosphere. The abstract of the paper states that, “Mountainous areas form a very specific context for sound propagation. There is a particular ground effect and meteorological conditions are often extreme. In this paper, detailed sound propagation calculations are compared to noise measurements accompanied by meteorological observations.” This study concludes that the narrow terrain causes the noise to attenuate less rapidly compared to wide valleys.

The noise model used for Mission Rock is based on International Standards Organization 9613-2 - Sound Attenuation during Propagation Outdoors which accounts for the effects of atmospheric conditions (such as downwind conditions) and elevation on noise transmission. The proposed project site is located in the Santa Clara River Valley. This valley is wide and flanked by low-lying hills called the Sulphur Mountains on the west, and the Santa Susana Mountains on the east. The valley width near the Mission Rock site is about 2.3 miles on average. The hills rise above the valley floor by up to 1,972 feet, with smaller hills closest to the valley floor at less than 675 feet as they slope up to the peaks.

The site chosen for the comparison is a narrow valley (0.93 miles wide) formed within steep, high mountains rising approximately 4,817 feet above the valley floor. The atmosphere in this valley is unstable. This is in sharp contrast to the wide Santa Clara River Valley with low-lying hills and a more stable atmosphere. Based on these differences, staff believes that the conclusion made in the paper regarding noise increases due to the terrain should not be directly applied to the topography and climate at the Mission Rock site. Also, the noise sources in this study were mobile, transportation sources, which generally behave differently than stationary sources such as power plant equipment. Due to their movement, mobile noise sources have a higher potential of scattering more unevenly than stationary sources.

In addition, based on staff’s experience with noise at operating power plants in areas with elevated topography similar to the Mission Rock project area, noise form these power plants does not appear to be significantly affected by topography or the refractive state of the atmosphere. Examples of these power plants include Humboldt Bay, Sentinel, King City, Gilroy Energy Center, Gilroy Foods, Redding Power, and Otay Mesa.

The acoustic industry has advanced considerably over the years and new power plants in particular have been built to operate very quietly when needed. The project would be designed and built to comply with **NOISE-4** in meeting the county’s threshold and avoiding tonal noises. This would be demonstrated by actual noise measurements during project operation.

CUMULATIVE IMPACTS AND MITIGATION

Section 15130 of the CEQA guidelines (California Code of Regulations, Title 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts (from existing and/or reasonably foreseeable projects) that, when considered together, compound or increase other environmental impacts. CEQA guidelines require that this discussion reflect the severity of the impacts and the likelihood of their occurrence, but do not need to provide as much detail as the discussion of impacts solely attributable to the project.

Typically, projects within the one-mile radius of a power plant project may present the potential for cumulative noise impacts. Thus, staff's cumulative noise analysis covers the area within this radius. Mission Rock would involve the construction and operation of a new electricity generation facility on a parcel zoned for General Industrial uses, which would be consistent with other uses within the existing community designation. Within the one-mile radius of Mission Rock, there are three proposed projects:

- Approximately 0.5 miles northeast: approved permit adjustment to obtain zoning clearance for construction of storage racks, an air compressor, a cargo container, a covered used oil storage tank, storage enclosure, and a 1,000-gallon septic tank.
- Approximately 0.4 miles northeast: proposed minor modification to Conditional Use Permit 960, issued to Santa Clara Waste Water for a wastewater treatment facility, to clarify (1) the waste stream accepted by the facility and treatment methods, (2) the list of facility equipment, and (3) the facility's operating hours, truck traffic limits, and limit on the number of employees.
- Approximately 0.3 miles northwest: proposed construction of a 20,000 square foot evidence storage building at the Todd Road Ventura County Jail.

Existing county LORS would restrict construction to daytime hours and limit the noise these facilities could generate. Condition of Certification **NOISE-4** would ensure that Mission Rock's operational noise levels comply with applicable local noise requirements and create a less-than significant impact at noise-sensitive receptors. The LORS compliance requirements and mitigation measures provided by the noise conditions of certification in this staff assessment for Mission Rock, combined with mitigation measures that would be required by the county LORS for the above projects, would result in no additional combined noise in the area of Mission Rock. For these reasons, Mission Rock would not cause a significant cumulative noise impact.

ENVIRONMENTAL JUSTICE

As discussed in the **Environmental Justice** section of this staff assessment, the minority population in the six-mile radius around the proposed project constitutes an environmental justice (EJ) population based on race and ethnicity (**Environmental Justice Figure 1**). Staff reviewed **Environmental Justice Figures 1** and **2** and **Table 3** in the **Environmental Justice** section to examine whether the construction and operation of Mission Rock would have significant, unmitigated impacts or disproportionate impacts on an EJ population. In this analysis, staff has used the benchmarks under **METHODS AND THRESHOLDS FOR DETERMINING**

SIGNIFICANCE to evaluate the project's noise impacts on the project area's populations, including its EJ population. Staff has prepared Conditions of Certification **NOISE-1** through **NOISE-7** to ensure noise impacts are reduced to less than significant for all the area's population, including the EJ population.

There are also approximately 51 agricultural jobs/farm workers within a one-mile radius of the project site, concentrated approximately 100 feet west of the site. There are approximately 4,398 agricultural jobs/farm workers within a six-mile radius of the project site, concentrated primarily to the northeast and south. In comparison, there are 25,877 agricultural jobs/farm workers in Ventura county (US Census 2014). Restrictions on construction activities, described in Conditions of Certification **NOISE-6** and **NOISE-7**, would reduce the noise impact to the workers. In addition, the workers would be protected through their employer's OSHA requirements for hearing protection and Condition of Certification **NOISE-1** requires the project owner to notify the nearby farm workers' employer of the start of construction. With the inclusion of **NOISE-1**, **NOISE-6, NOISE-7**, and other noise conditions of certification, impacts to the EJ population would not be disproportionate.

FACILITY CLOSURE

All operational noise from the project would cease when Mission Rock closes, and no further adverse noise impact from its operation would be possible. The remaining temporary noise sources 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 would be similarly treated; that is, noisy work would be performed during daytime hours with similar noise reduction measures as in **NOISE-6** (such as, the use of machinery and equipment that are properly insulated and the use of noise barriers). Noise LORS in existence at that time would apply. Unless modified, applicable noise-related conditions of certification included in the Energy Commission decision would also apply.

CONCLUSIONS

If built and operated in conformance with the following conditions of certification, Mission Rock 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 EJ population represented in **Environmental Justice Figures 1** and **2** and **Table 3**. Additionally, there would be no disproportionate impacts to the EJ population with the inclusion of **NOISE-1**, **NOISE-6, NOISE-7**, and other noise conditions of certification.

Staff recommends conditions of certification addressing worker and employee noise protection (**NOISE-3** and **NOISE-5**), measurement and verification that noise performance criteria is met at the project's noise-sensitive residential receptors (**NOISE-4**), and restrictions on construction activities (**NOISE-6** and **NOISE-7**). Also, **NOISE-1** and **NOISE-2** establish a public notification and noise complaint process to resolve any noise complaints regarding project construction or operation.

Staff retains the responsibility to monitor the enforcement of these conditions of certification. Staff would work under the authority of the CPM to monitor and review the reporting of project performance during construction and the full term of operation, including facility closure.

PROPOSED CONDITIONS OF CERTIFICATION

PUBLIC NOTIFICATION PROCESS

NOISE-1 Prior to the start of ground disturbance, the project owner shall notify all residents within one mile of the project site and one-half mile of the linear facilities, and the employer of the farm workers in the agricultural field approximately 100 feet west of the project site, 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: At least 15 days prior to ground disturbance, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, 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 the full term of operation, including facility closure, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints[4]. The project owner or its authorized agent shall:

- use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to the noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and

[4] A project-related noise complaint is a complaint about noise that is caused by the Mission Rock project as opposed to another source and may constitute a violation by the project of any noise condition of certification, which is documented by an individual or entity affected by such noise.

- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant that states that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file with the CPM a Noise Complaint Resolution Form, shown below, that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three business-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

EMPLOYEE NOISE CONTROL PROGRAM

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance with Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM. The project owner shall make the program available to Cal-OSHA upon request.

OPERATIONAL NOISE RESTRICTIONS AND SURVEY

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise levels due to the project operation alone do not exceed an hourly average exterior noise level of 49 dBA measured at or near monitoring location M1.

No new pure-tone components (as defined in **Noise Table A1**, last row) shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws project-related complaints.

When the project first achieves a sustained output of 85 percent or greater of its rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location M1, or at a closer location acceptable to the CPM and include L_{eq} and L_{90} readings. This survey shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

If the results from the noise survey indicate that the power plant noise exceeds the above value at the above monitoring location, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to reduce the pure tones to a level that complies with **Noise Table A1**, below.

Verification: The above noise survey shall take place within 30 days of the project first achieving a sustained output of 85 percent or greater of its rated capacity.

Within 15 days after completing the survey, the project owner shall submit a summary report to the CPM. Included in the survey report shall be a description of any additional 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 implemented and in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

OCCUPATIONAL NOISE SURVEY

NOISE-5 Following the project's attainment of a sustained output of 85 percent or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas within the power plant.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, Sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, Section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures to be employed in order to comply with the above regulations.

Verification within 30 days after completing each survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request from OSHA and Cal-OSHA.

CONSTRUCTION NOISE RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy[5] work associated with the construction work relating to any project features, including pile driving and installation of linear facilities shall be restricted to the times delineated below:

[5] Noise that draws a project-related complaint. For definition of a "project-related complaint", see the footnote in Condition of Certification **NOISE-2**.

Mondays through Friday:	7:00 a.m. to 7:00 p.m.
Saturdays, Sundays, and Local Holidays:	9:00 a.m. to 7:00 p.m.

Construction work shall be performed in a manner to ensure excessive noise[6] is prohibited and the potential for noise complaints is reduced as much as practicable. Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers and other state-required noise attenuation devices. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use (jake braking) shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction work associated with this project.

Construction equipment generating excessive noise shall be updated or replaced. Temporary acoustic barriers shall be installed around stationary construction noise sources if beneficial in reducing the noise. The project owner shall reorient construction equipment, and relocate construction staging areas, when possible, to minimize the noise impact to nearest noise-sensitive receptors.

PILE DRIVING MANAGEMENT

NOISE-7 The project owner shall perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. The project owner shall notify the residents in the vicinity of pile driving prior to start of pile driving activities.

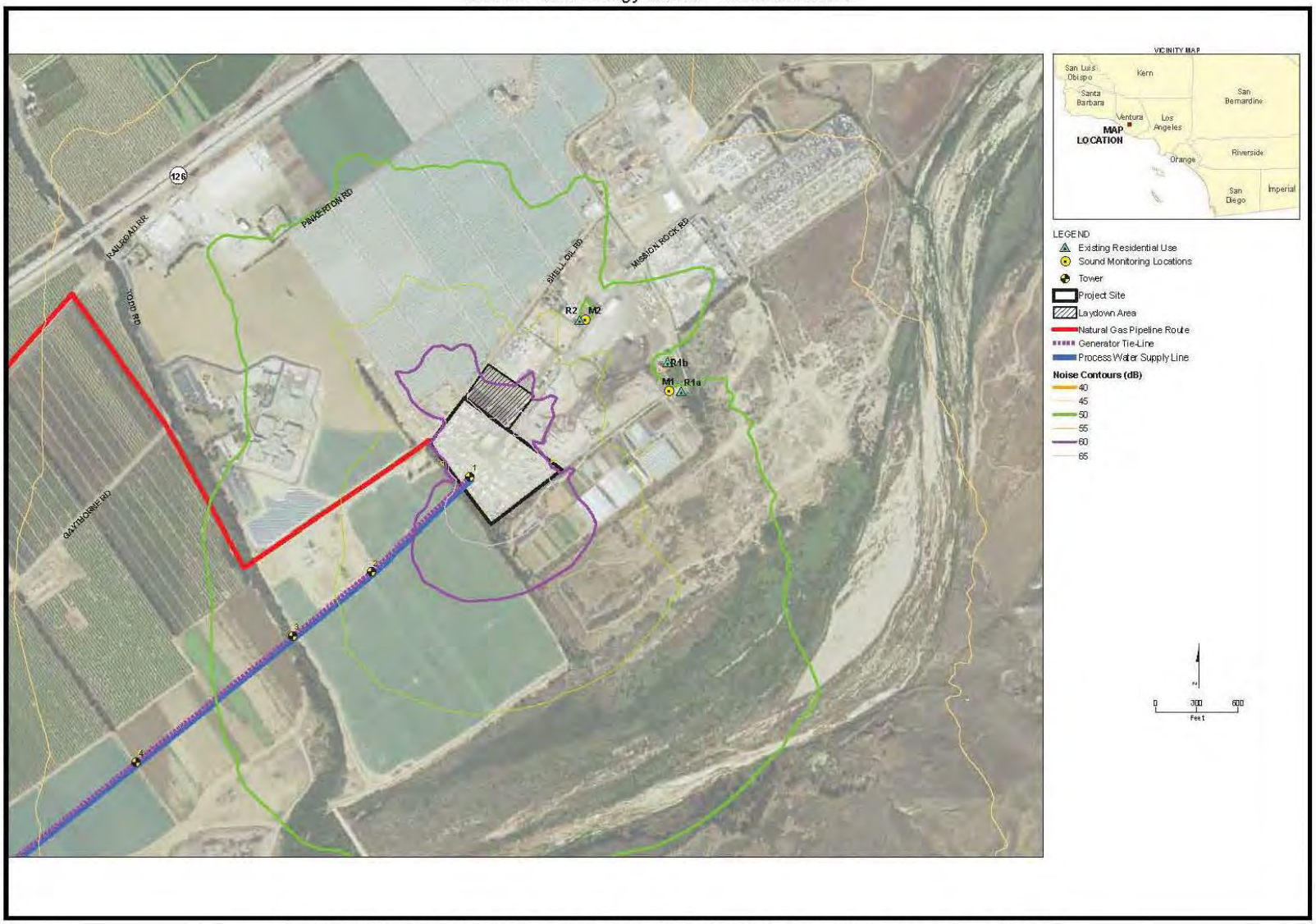
Verification: At least 15 days prior to first pile driving, the project owner shall submit to the CPM a description of the pile driving technique to be employed, including calculations showing its projected noise impacts at monitoring location M1.

At least 10 days prior to first pile driving, the project owner shall notify the residents within one mile of the pile driving. In this notification, the project owner shall state that it will perform this activity in a manner to reduce the potential for any project-related noise and vibration complaints as much as practicable. The project owner shall submit a copy of this notification to the CPM prior to the start of pile driving.

[6] Noise that draws a project-related complaint.

NOISE AND VIBRATION - FIGURE 1

Mission Rock Energy Center - Noise Contours



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Attachment DR63-1, CH2MHILL

NOISE COMPLAINT RESOLUTION FORM

Mission Rock Energy Center

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

CAL 2015a. Mission Rock Energy Center, LLC, Calpine/Alexander Makler (TN207151-27). Application for Certification, dated December 18, 2015. Submitted to Robert Oglesby/CEC/Docket Unit on December 30, 2015.

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CEC 2016i – California Energy Commission (TN215102) Report of Conversation; ROC regarding Noise & Vibration between Christopher Dennis with CEC staff and Winston Wright with Ventura County Planning Division. December 22, 2016.

CH2M 2016c – CH2M Hill (TN213878). Data Responses to Data Requests Set 1 and Set 1A (Nos. 1 through 114), Mission Rock Energy Center project. October 3, 2016.

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Renterghem and Bottledooren 2007. Comparison of Measurements and Predictions of Sound Propagation in a Valley-Slope Configuration in an Inhomogeneous Atmosphere, T. Van Renterghem and D. Bottledooren, J. Acoust. Soc. Am. 121 (5), May 2007, pages 2522–2533.

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NOISE APPENDIX A
FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive areas, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that A-weighting of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **Noise Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (*Effects of Noise on People*, U.S. Environmental Protection Agency, December 31, 1971).

In order to help the reader understand the concept of noise in decibels (dBA), **Noise Table A2** has been provided to illustrate common noises and their associated sound levels, in dBA

Noise Table A1
Definition of Some Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a Sound Level Meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L_{10}, L_{50}, & L_{90}	The A-weighted noise levels that are exceeded 10 percent, 50 percent, and 90 percent of the time, respectively, during the measurement period. L_{90} is generally taken as the background noise level.
Equivalent Noise Level, L_{eq}	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location (often used for an existing or pre-project noise condition for comparison study).
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: *Guidelines for the Preparation and Content of Noise Elements of the General Plan*, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.

Noise Table A2
Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environnent	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press, Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
Source: *Handbook of Noise Measurement*, Arnold P.G. Peterson, 1980			

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects 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*, Academic Press, New York, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

Noise Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by six dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure, and list permissible noise level exposure as a function of the amount of time to which the worker is exposed:

Noise Table 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.

PUBLIC HEALTH

Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The staff of the California Energy Commission has analyzed the information provided by the applicant for the Mission Rock Energy Center (Mission Rock or the project) in support of a license for construction and operation of the facility. The applicant's and staff's analyses were of the potential for health risks from the emitted toxic air pollutants. These analyses were conducted according to the guidelines and requirements of the California Air Resources Board (ARB) and the Office of Environmental Health Hazard Assessment (OEHHA).

Staff evaluated the applicant's assessment approach and agrees with the applicant's finding that the toxic air emissions from Mission Rock's construction and operation would not lead to significant health impacts as proposed. Staff's analysis of potential health impacts was based on a highly conservative health-protective methodology that accounts for impacts on all individuals including those more sensitive to the effects of chemical exposure than the population in general. As part of its analysis, staff also considered the environmental justice population, local farm workers, and recreational users. Staff's only recommendation is for a condition of certification to minimize bacterial growth in the chiller's evaporative cooling system's circulating water. Public health impacts due to emissions of criteria pollutants are discussed in the **Air Quality** section of this Preliminary Staff Assessment.

INTRODUCTION

The purpose of this section of the Preliminary Staff Assessment (PSA) is to determine if the toxic air contaminants (TACs) from the proposed Mission Rock Energy Center (Mission Rock or project) would have the potential to produce significant adverse public health impacts or violate standards for the protection of public health. The pollutants of primary concern in this analysis are those for which no ambient air quality standards have been established. These are known as non-criteria pollutants or air toxics when emitted into the air or as toxic soil contaminants when encountered in the soil. These pollutants exist as volatile or semi-volatile organic compounds (VOCs) or as toxic metals. If project-related emissions were to pose a significant health risk to area residents, staff would recommend mitigation as appropriate or would recommend that the Energy Commission not approve the project.

Those pollutants which have ambient are quality standards are known as criteria pollutants and these are typically emitted in much larger quantities from natural gas fueled power plants than non-criteria pollutants. Mission Rock's ability to comply with these air quality standards is assessed in the **Air Quality** section by comparing both construction phase and operating phase impacts with the applicable air quality standards after adding existing background levels. When a project is proposed for an area which currently exceeds these standards, mitigation might be necessary to prevent significant additions to existing levels.

Since Mission Rock is proposed for an area with existing violations of specific air quality standards as noted by the applicant (CAL 2015a, pp 5.1-25 through 5.1-29) and discussed in the **Air Quality** section, such mitigation is recommended in that section.

The criteria pollutants are noted in this analysis (along with regulations for their control) because they usually contribute significantly to the total pollutant burden in any given area. Furthermore, the same control technologies may be effective for controlling both criteria and non-criteria pollutants when emitted from the same source. Compliance with the required control technologies is more fully discussed in the **Air Quality** section.

In addition to the analyses in the **Public Health** and **Air Quality** sections, the Energy Commission staff addresses the health impacts on public and workers from accidental releases of hazardous materials in the **Hazardous Materials Management** and **Worker Safety and Fire Protection** sections. The health and nuisance effects from electric and magnetic fields are discussed in the **Transmission Line Safety and Nuisance** section. Pollutants released from the project's wastewater streams are discussed in the **Soil and Water Resources** section. Releases in the form of hazardous and nonhazardous wastes are described in the **Waste Management** section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Public Health Table 1 lists the federal, state, and local laws, ordinances, regulations, and standards (LORS) applicable to the control of TAC emissions and mitigation of public health impacts for Mission Rock. This PSA evaluates compliance with these LORS.

Public Health Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	*Description*	*Complies?*	*Basis for Compliance*
Federal			
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants (HAPs). This section requires new sources that emit more than 10 tons per year of any specified HAP or more than 25 tons per year (tpy) of any combination of HAPs to apply Maximum Achievable Control Technology (MACT).	Yes	Compliant. Total emission rate for reactive organic compounds (ROCs) would be 4.98 tpy which is less than the threshold of 10 tpy meaning that this section does not apply to Mission Rock.
40 Code of Federal Regulations (CFR) Part 63 Subpart YYYY (National Emission Standard for	This regulation applies to combustion turbines located at major sources of HAP emissions. A major source is defined as a facility with	Yes	Compliant. The total ROC emission rate of 4.98 tpy is less than 25 tpy meaning that Mission Rock is not

Applicable LORS	Description	Complies?	Basis for Compliance
Hazardous Air Pollutants for Stationary Combustion Turbines)	emissions of 10 tons per year (tpy) of a single HAP or 25 tpy or more of a combination of HAPs based on the potential to emit.		considered a major source of Hazardous air pollutants (HAPS) by federal standards.
State			
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	This section establishes thresholds of exposure to carcinogenic substances above which Proposition 65 exposure warnings are required.	Yes	Compliant. The project will comply with the warning requirements of this code. See discussion of significance criteria below.
California Health and Safety Code, Article 2, Chapter 6.95, Sections 25531 to 25541; California Code of Regulations Title 19 (Public Safety), Division 2 (Office of Emergency Services), Chapter 4.5 (California Accidental Release Prevention Program)	These sections require facilities storing or handling significant amounts of acutely hazardous materials to prepare and submit Risk Management Plans.	Yes	Compliant. Please see discussion of the project's Hazardous Material Handling Program in the Hazardous Materials Handling section.
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."	Yes	Compliant. There would be no significant health impacts from the project's toxic air emissions.
California Health and Safety Code Sections 44300 et seq.	Air Toxics Hot Spots Program requires participation in the inventory and reporting program at the local air pollution control district level.	Yes	Compliant. According to VCAPCD's Preliminary Determination of Compliance (PDOC), Mission Rock would be in compliance with the

Applicable LORS	Description	Complies?	Basis for Compliance
			inventory and reporting requirements of this code as required at the local level.
California Health and Safety Code Sections 44360 to 44366 (Air Toxics "Hot Spots" Information and Assessment Act—AB 2588)	These sections require that, based on results of a health risk assessment (HRA) conducted per ARB (California Air Resources Board) / OEHHA (Office of Environmental Health Hazard Assessment) guidelines, toxic contaminants do not exceed acceptable levels.	Yes	Compliant. The Maximum Individual Cancer Risk (MICR) and the non-cancer acute and chronic hazard indices are estimated to be below levels of health significance.
California Public Resource Code section 25523(a); Title 20 California Code of Regulations 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 sections require a quantitative health risk assessment for new or modified sources, including power plants that emit one or more toxic air contaminants (TACs).	Yes	Compliant. The required quantitative health risk assessment was conducted for Mission Rock's toxic air emissions.
Local			
VCAPCD's Rule 26 (New Source Review of Toxic Air Contaminants)	This rule specifies limits for maximum individual cancer risk (MICR), cancer burden, and non-cancer acute and chronic hazard index (HI) from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants (TACs).	Yes	Compliant. The emissions of toxic air pollutants from Mission Rock would be at levels without the potential for health effects.
VCAPCD Rule 62.7 (Asbestos Emissions from Demolition/Renovation Activities)	This rule specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.	Yes	Compliant. Mission Rock would comply with requirements regarding safe asbestos handling and disposal as required in the Waste Management section.

Applicable LORS	Description	Complies?	Basis for Compliance
VCAPD Rule 51: Nuisance	This rule prohibits the discharge of air pollutants that cause injury, detriment, and nuisance, annoyance to the public. For any increase in mode or time of operation, this rule requires an analysis to determine the possible impacts on the nearest resident or worksite. The need for further action would depend on compliance with the air district's significance criteria for cancer and non-cancer impacts.	Yes	Compliant. Both the maximum individual cancer risk and the facility wide cancer risk would be below levels of significance.

SETTING

This section describes the environment in the vicinity of the proposed project site from a public health perspective. Characteristics of the natural environment such as meteorology and terrain would affect a project's potential for impacts on public health. For example, an emission plume from a given facility would affect elevated-terrain areas before lower-terrain areas because of reduced opportunity for atmospheric mixing with increased terrain height. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts compared to lower-level areas. Also, the land use around a project site can influence the significance of impacts due to population distribution and density, which can increase public exposure to a project's emissions. Additional factors affecting potential public health impacts include existing air quality and level of existing contamination.

As more fully discussed by the applicant (CAL 2015a pp. ES-1, 5.7-3, 5.9-1, and 5.9-3), and in staff's **Project Description** section, Mission Rock is proposed as a natural gas-fired, simple-cycle combustion turbine electrical generating facility with a total of five combustion turbines rated at a nominal generating capacity of 275 megawatts (MW) and would be co-located with battery units which can store and deliver an additional 25 MW of electricity for up to four hours. The proposed site is a 9.79-acre parcel located in an industrial park at 1025 Mission Rock Road in unincorporated Ventura County. The proposed site is about 3 miles southwest of downtown Santa Paula, California and currently developed as an asphalt concrete-paved recreational vehicle and boat storage yard. There is a storage shop together with an office building and a wastewater holding tank which would all be removed before beginning construction.

Mission Rock would consist of the following:

- Five LM6000 PG Sprint combustion turbines operating in a simple-cycle mode;
- An ultra-low sulfur diesel-fueled fire pump;
- Selective catalytic reduction to control oxides of nitrogen;
- Oxidation catalyst to control carbon monoxide and volatile organic compounds
- A six-cell cooling tower; and,
- Necessary support systems and processes.

The facility would be designed and operated to meet the emission control requirements of the Ventura County Air Pollution Control District (VCAPCD) where it would be located.

SITE AND VICINITY DESCRIPTION

The proposed site is zoned for industrial uses but the immediate vicinity is mostly rural, made up mostly of open space, agricultural uses (grassland, pasture, and cash crops) and undeveloped rural areas (shrub land, forests, and wetlands) and therefore lightly populated. The Ventura County Jail is approximately 900 feet to the northwest of the proposed site.

Based on the 2010 Census, the total population within a six-mile radius of the site is approximately 124,818 further marking its standing as a rural area. Adjacent to the site are the Granite Construction Company asphaltic plant, an asphalt recycling facility, several automobile dismantling facilities, auto repair and salvage yards, oil and gas wells, and agricultural lands.

The applicant (CAL 2015a, p 5.9-1 and Appendix 5.1D) has provided a sensitive receptor listing for the population within a six-mile radius of the proposed site. These consist of the following:

- daycare centers
- nursing homes
- schools
- hospitals
- colleges
- county jail

Sensitive receptors are individuals such as infants, the aged, and people with specific illnesses or diseases, who thus are more sensitive to the effects of chemical exposure than the public in general. Safe exposure limits on such impacts are established to include safety margins considered adequate to protect against health symptoms among both the general public and these sensitive individuals. These margins of safety are established from health effects information as available during the limits or standard setting period.

As more becomes known through further studies, each standard or exposure limit could be revised to ensure the desired health protection. Such sensitivity to non-cancer impacts does not necessarily apply to cancer-causing effects whose underlying biological mechanisms are different. Staff requires identification of each area's sensitive receptor locations for further insight into the nature of the population potentially exposed to a project's emissions. Such insight is not necessarily intended for specific mitigation but could be helpful in identifying the most environmentally acceptable location for a proposed facility. The greater the number of sensitive receptor locations around an available site, the more the potential for exposure-related complaints in the area and the more appropriate it might be to consider an alternative site.

The closest sensitive receptor location of focus is a school approximately 1.2 miles (6,600 feet) away with the nearest residence approximately 941 feet and only a handful of residences within a one-mile radius. Agricultural workers in fields near the project site are not considered sensitive receptors, but are noted and analyzed as off-site workers who are not necessarily more sensitive to emissions than the general public.

METEOROLOGY AND CLIMATE

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into the air and the direction of pollutant transport. This in turn affects the level of public exposure to emitted pollutants along with associated health risks. When wind speeds are low and the atmosphere is stable for example, dispersion is reduced and localized exposures may increase.

Atmospheric stability is one characteristic related to turbulence, or the ability of the atmosphere to disperse pollutants from convective air movement. Mixing heights (the heights marking the area within which the air is well mixed) are lower during mornings because of temperature inversions. These heights increase as the day gets warmer. Staff's **Air Quality** section presents a more detailed description of meteorological data for the area.

The Mediterranean climate of Ventura County has a large-scale wind and temperature regime controlled by proximity to the Pacific Ocean and seasonal migration of the Pacific high-pressure system. As a result, summers are relatively cool and winters warm in comparison to other locations. Temperatures below freezing occur infrequently, as do temperatures over 100 degrees Fahrenheit (°F) (CAL 2015a, Section 5.1.2.3).

EXISTING PUBLIC HEALTH CONCERNS

When evaluating a new project, staff sometimes conducts a study or analysis of existing public health issues in the project vicinity. Such an analysis is prepared to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population within the air basin of the proposed project site. This would provide staff with a basis for evaluating the significance of any additional health impacts from the project and assessing the need for further mitigation.

As previously noted, the proposed Mission Rock site is located within the Ventura County Air Pollution Control District (VCAPCD). By examining average toxic concentration levels from representative air monitoring sites, together with cancer risk factors specific to each carcinogenic contaminant, a lifetime cancer risk can be calculated to provide a background risk level for inhalation of ambient air. The continuing prominence of project-related cancer risks stems from present understanding of the carcinogenic process which holds that because cancer is induced at the molecular level, every carcinogenic exposure has an associated risk unlike non-cancer effects which occur only after exposure above specific effects thresholds. This molecule-level induction has thus established the cancer end point as the more sensitive measure of the environmental acceptability of a source of both carcinogenic and non-carcinogenic emissions.

Given the available health information and the complexity of the proposed project which has multiple sources of multiple pollutants, staff also conducted an in-depth analysis of existing health issues in the vicinity of Ventura County where the proposed site would be located. The existing health analysis includes asthma, Chronic Obstructive Pulmonary Disease (COPD), Valley Fever, and cancer. The analysis shows in general that Ventura County ranks higher than most California counties when it comes to existing health status. Please see the appendix to this staff assessment (**Appendix A)** for more details.

Cancer Risk

When examining the general cancer risk from any given source, staff considers it important to note that the overall theoretical lifetime background risk of developing cancer for the average male in the United States is about 1 in 2, or 500,000 in 1 million and about 1 in 3, or 333,333 in 1 million for the average female (American Cancer Society 2014).

From 2008 to 2012, the cancer incidence rates in California were 48.56 in 1 million for males and 39.48 for females. Also, from 2008 to 2012, the cancer death rates for California were 18.34 in 1 million for males and 13.53 in 1 million for females (American Cancer Society, Cancer Facts & Figures 2016, Table 4 and Table 5). The trend was toward lower values when compared to earlier results for the 2007 to 2011 period.

By examining the State Cancer Profiles presented by the National Cancer Institute, staff found that the trend of cancer death rates in Ventura County had been falling between 2008 and 2012. These rates (of 14.72 in 1 million, combined male/female) were somewhat lower than the statewide average of 15.51 in 1 million (National Cancer Institute 2016a).

According to the County Health Status Profiles 2015, the death rate from all cancers, from 2011 to 2013, was 14.68 in 1 million for Ventura County which is slightly lower than the cancer death rate (15.09 in 1 million) for California in general (CDPH 2015).

Specifically for lung and bronchus cancers, from 2008 to 2012 the cancer incidence rates in California were 5.58 in 1 million for males and 4.21 in 1 million for females. Also, from 2008 to 2012 the cancer death rates for California were 4.37 in 1 million for males and 3.05 in 1 million for females (American Cancer Society, Cancer Facts & Figures 2016, Table 4 and Table 5). The trend is toward lower values compared to earlier results for the 2007 to 2011 period.

The statistics from the State Cancer Profiles are similar: Lung and Bronchus Cancer rate in Ventura County during 2007-2011 was 4.47 in 1 million, which is slightly lower than the incidence rate for the entire state of 4.95 in 1 million (National Cancer Institute 2016b).

According to the County Health Status Profiles 2015, the death rate from lung cancers, from 2011 to 2013, was 2.85 in 1 million for Ventura County, which is slightly lower than the death rate of 3.36 in 1 million for California (CDPH 2015).

Asthma

The asthma diagnosis rates in Ventura County are also lower than the average rates in California for both adults (ages 18 and over) and children (ages 1-17). The percentage of adults diagnosed with asthma was reported as 6.5 percent in 2005-2007, compared to 7.7 percent for the general California population. Rates for children for the same 2005-2007 period were reported as 7.5 percent in Ventura County compared to 10.1 percent for the state in general (Wolstein et al., 2010).

The Ventura County Health Care Agency Public Health division also provides information on its website regarding community health and demographic information for community members (Ventura County 2015a). Asthma diagnosis rates in Ventura County for adults are below the state average, but slightly higher than average for children in Ventura County. The percentage of adults who have been diagnosed with asthma was 10.9 percent in 2011-2012, compared with 14 to 17.7 percent for the population statewide (Ventura County 2015b). The local asthma rate for children was 16.5 percent, compared with 15.4 percent statewide for the same time period (Ventura County 2015c).

Valley Fever

One other respiratory illness that could be encountered in the project area is Valley Fever (Coccidioidomycosis). As more fully discussed in the **Worker Safety and Fire Protection** section, Valley Fever is an infection that occurs when spores of the fungus *Coccidioides immitis* enter the human lung through inhalation. When people breathe in these *Coccidioides* spores, they become at risk of developing this disease.

Valley Fever is currently endemic in six southwestern states, including California. In California, the highest Valley Fever rates have been recorded in Merced, Madera, Fresno, Tulare, Kern, Monterey, Kings, and San Luis Obispo counties (CDC 2014). According to the Centers for Disease Control and Prevention (CDC), parts of Ventura County are suspected endemic areas for Coccidioidomycosis (CDC 2015). In Ventura County, Valley Fever tends to be more prevalent in the hotter and dryer Simi Valley area, with higher incidences occurring in 2004 that may be attributed to wildfires in the area and the ensuing landslides.

In a recent study of 15 counties impacted by Valley Fever between 2007 and 2011, Ventura County had 300 total reported cases, with 65 of those occurring in Oxnard. Ventura County ranked ninth out of the 15 counties in the total number or cases reported and in the mean incidence rate for the five year study period. There was no observed tendency of the number of cases to increase over time (MacLean 2014).

Since the potential for Valley Fever is most likely from worker dust exposure, staff finds it most effective to address the issue in terms of worker impacts, prevalence, geographic distribution, and mitigation measures in the **Worker Safety and Fire Protection** and **Air Quality** sections. Staff regards the related conditions of certification: **SAFETY-9**, and **SAFETY-10** as adequate mitigation regarding Mission Rock. **AQ-SC3** and **AQ-SC4** are recommended for additional mitigation,

DIRECT/INDIRECT IMPACTS AND MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

This public health section of staff's assessment discusses the toxic air contaminant (TAC) emissions to which the public could be exposed during project construction/demolition and routine operation. Following the release of TACs into the air, water or soil, people could come into contact with them through inhalation, dermal contact, or ingestion via contaminated food, water or soil.

As previously noted, the air pollutants for which no ambient air quality standards have been established are known as non-criteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, non-criteria pollutants have no ambient (outdoor) air quality standards that specify health-based levels considered safe for everyone[1]. Since non-criteria pollutants do not have such standards, a health risk assessment (HRA) is normally used to determine if people might be exposed to those types of pollutants at unhealthy levels.

The standard approach currently used for HRAs involves four steps: 1) hazard identification, 2) exposure assessment, 3) dose-response assessment and 4) risk characterization (OEHHA, 2003). These four steps are briefly discussed below:

1. **Hazard identification** which is conducted to identify the potential health effects that could be associated with project emissions. For air toxics sources, the main purpose is to identify whether or not a hazard exists. Once a hazard has been identified, staff would evaluate the exact toxic air contaminant(s) of concern and determine whether a TAC is a potential human carcinogen or is associated with other types of adverse health effects.

[1] Carbon dioxide (CO_2) is also a non-criteria pollutant but is also not considered a TAC at normal concentrations and is not evaluated in this analysis.

2. An **exposure assessment** which is conducted to estimate the extent of public exposure to project emissions, including: (1) the worst-case concentrations of project emissions in the environment using dispersion modeling; and (2) the amount of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact. Therefore, this step involves emissions quantification, modeling of environmental transport and dispersion, evaluation of environmental fate, identification of exposure routes, identification of exposed populations and sensitive subpopulations, and estimation of short-term and long-term exposure levels.

3. A **dose-response assessment** which is conducted to characterize the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations. The assumptions and methodologies for dose-response assessments are different between cancer and non-cancer health effects. In the case of cancer risk assessment, the dose-response relationship is expressed in terms of a potency (or slope) factor that is used to calculate the probability of getting cancer associated with an estimated exposure. In cancer risk assessments, as previously noted, it is assumed that the initiating effects occur at the molecular level and that the risk from exposure is directly proportional to dose with no threshold for effects. In non-cancer risk assessments, as also noted, dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer Reference Exposure Levels (RELs). The acute and chronic RELs are defined as the concentration at which no adverse non-cancer health effects are anticipated. Unlike cancer health effects, non-cancer acute and chronic health effects are generally assumed to have thresholds for adverse effects. In other words, acute or chronic injury from a TAC would not occur until exposure to the pollutant has reached or exceeded a certain concentration (i.e., threshold).

4. **Risk characterization** which is conducted to integrate the health effects and public exposure information and to provide quantitative estimates of health risks resulting from project emissions. Staff characterizes potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Staff conducts its public health analysis by evaluating the information and data provided in the Application for Certification (AFC) by the applicant. Staff also relies upon the expertise and guidelines of the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) in order to: (1) identify contaminants that cause cancer or non-cancer health effects, and (2) identify the toxicity, cancer potency factors and non-cancer RELs for these contaminants. Staff relies upon the expertise of the California Air Resources Board (ARB) and local air pollution control districts (air districts) to conduct ambient air monitoring of TACs and on the California Department of Public Health to evaluate pollutant impacts in specific communities. It is not within the purview or the expertise of the Energy Commission staff to duplicate the expertise and statutory responsibility of these agencies.

For each project, a screening-level risk assessment is initially performed using simplified assumptions that are intentionally biased toward protection of public health. That is, staff uses an analysis designed to overestimate public health impacts from exposure to project emissions. It is likely that the actual risks from the source in question would be much lower than the risks as estimated by the screening-level assessment and that the actual risk may indeed be zero. Such an assessment approach usually involves the following:

- using the highest levels of pollutants that could be emitted from the facility;
- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- assuming that an individual's exposure to carcinogenic (cancer-causing) agents would occur continuously for 30[2] years; and
- using health-based objectives aimed at protecting the most sensitive members of the population which as previously noted may include the young, elderly, and those with respiratory illnesses.

A screening-level risk assessment would, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities would also emit certain substances (e.g. semi-volatile organic chemicals and heavy metals) that could present a health hazard from non-inhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these multi-pathway substances are present in facility emissions, the screening-level analysis would include the following additional exposure pathways: soil ingestion, dermal exposure, consumption of locally grown plant foods, mother's milk and water ingestion[3] (OEHHA 2003, p. 5-3).

The HRA process addresses three categories of health impacts: (1) acute (short-term) health effects, (2) chronic (long-term) non-cancer effects, and (3) cancer risk (also long-term). They are discussed below.

[2] In their 2015 Guidance, OEHHA recommends that residential exposure time be specified as 30 years instead of 70 years that formerly was assumed when estimating individual cancer risk for the maximally exposed individual (MEI). For the maximally exposed individual worker (MEIW), OEHHA now recommends using an exposure of 25 years to estimate individual cancer risk for off-site workers (OEHHA 2015, Table 8.5).

[3] The HRA exposure pathways for Mission Rock include inhalation, home grown produce, dermal absorption, soil ingestion, fish ingestion and mother's milk, but do not include water ingestion because water sources would not be impacted by the project.

Types of Health Effects

Acute health effects are those that result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Such effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract. Chronic non-cancer health effects are those non-cancer-inducing effects that result from long-term exposure to pollutants. Long-term exposure is defined as more than 12 percent of a lifetime, or about eight years (OEHHA 2003, p. 6-5). Chronic non-cancer health effects include heart and respiratory system diseases that reduced breathing efficiency such as asthma.

Reference Exposure Levels (RELs)

The analysis for both acute and chronic non-cancer health effects compares the maximum project contaminant levels to safe levels known as the previously noted Reference Exposure Levels, or RELs. These are amounts of toxic substances to which even sensitive individuals could be exposed without suffering any adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are specifically designed to protect the most sensitive individuals in the population, such as infants, the aged, and people with specific illnesses or diseases which make them more sensitive to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include specific margins of safety. The margins of safety account for uncertainties associated with inconclusive scientific and technical information available at the time of setting the RELs. They are therefore meant to provide a reasonable degree of protection against hazards that research has not yet identified.

Concurrent exposure to multiple toxic substances would result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with California Air Pollution Control Officers Association (CAPCOA) guidelines, the HRA assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other possible mechanisms due to multiple exposures include those cases where the actions would be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of exposures, the health risk assessment could underestimate or overestimate the risks.

Carcinogenic Effects

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the carcinogen would occur over a 30-year lifetime[i]. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound estimate based on worst-case assumptions.

Cancer Potency Factors

Cancer risk is expressed in terms of chances per million of developing cancer. It is a function of the maximum expected pollutant concentration, the probability that a particular pollutant would cause cancer (called potency factors), and the length of the exposure period. Cancer risks for individual carcinogens are added together to yield a total cancer risk for each potential source. The conservative nature of the screening assumptions used means that the actual cancer risks from project emissions would be considerably lower than estimated.

As previously noted, the screening analysis is performed to assess worst-case risks to public health associated with the proposed project. If the screening analysis were to predict a risk below significance levels, no further analysis would be necessary and the source would be considered acceptable with regard to carcinogenic effects. If, however, the risk were to be above the significance level, then further analysis using more realistic site-specific assumptions would be performed to obtain a more accurate estimate.

SIGNIFICANCE CRITERIA

Energy Commission staff assesses the maximum cancer impacts from specific carcinogenic exposures by first estimating the potential impacts on the maximally exposed individual (also known as the maximally exposed individual receptor or MEIR). This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions. Since the individual's exposure would produce the maximum impacts possible around the source, staff uses this related risk estimate as a marker for acceptability of the project's carcinogenic impacts.

Interpreting Acute and Chronic Non-cancer Health Risks

As described earlier, non-criteria pollutants are evaluated for short-term (acute) and long-term (chronic) non-cancer health effects, and the noted cancer impacts from long-term exposures. The significance of project-related impacts is determined separately for each of the three health effects categories. Staff assesses the non-cancer health effects by calculating a hazard index. A hazard index is a ratio obtained by comparing exposure from facility emissions to the safe exposure level (i.e. REL) for that pollutant. A ratio of less than 1.0 suggests that the worst-case exposure would be below the limit for safe levels and would thus be insignificant with regard to health effects.

The hazard indices for all toxic substances with the same type of health effect are added together to obtain a Total Hazard Index for the source. The Total Hazard Index is calculated separately for acute effects and chronic effects. A Total Hazard Index of less than 1.0 would indicate that cumulative worst-case exposures would not lead to significant non-cancer health effects. In such cases, asthma and other non-cancer adverse health impacts would be considered unlikely even for sensitive members of the population. Staff would therefore conclude that there would be no significant asthma and other non-cancer project-related public health impacts. This assessment approach is consistent with risk management guidelines of both California OEHHA and U.S. EPA.

Interpreting Cancer Risks

Staff relies upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, (Health & Safety Code, §§25249.5 et seq.) for guidance in establishing significance levels for carcinogenic exposures. Title 22, California Code of Regulations, section 12703(b) states that "the risk level which represents no significant risk shall be one which is calculated to result in one or less excess cancer cases within an exposed population of 100,000, assuming lifetime exposure." This risk level is equivalent to a cancer risk of 10 in 1 million, which is also written as 10×10^{-6}. In other words, under state regulations, an incremental cancer risk greater than 10 in 1 million from a project should be regarded as suggesting a potentially significant carcinogenic impact on public health. The 10 in 1 million risk level is also used by the Air Toxics "Hot Spots" (AB 2588) program as the public notification threshold for air toxic emissions from existing sources.

An important distinction between staff's and the Proposition 65 risk characterization approach is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all the cancer-causing pollutants to which the individual might be exposed in the given case. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than the manner applied by Proposition 65. The significant risk level of 10 in 1 million is also consistent with the level of significance adopted by many California air districts. In general, these air districts would not approve a project with a cancer risk estimate of more than 10 in 1 million.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection could be ensured. Staff's analysis also addresses potential impacts on all segments of the population, including the young, the elderly, and individuals with existing medical conditions that would render them more sensitive to the adverse effects of toxic air contaminants and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, staff uses the most current acceptable public health exposure levels (both acute and chronic) set to protect the public from the effects of air toxics being analyzed. When a screening analysis shows the cancer risks to be above the significance level, refined assumptions would be applied for likely a lower, more realistic, risk estimate. If, after refined assumptions, the project's risk is still found to exceed the significance level of 10 in 1 million, staff would recommend appropriate measures to reduce the risk to less than significant levels. If, after all feasible risk reduction measures have been considered and a refined analysis still identifies a cancer risk of greater than 10 in 1 million, staff would deem such a risk to be significant and would not recommend project approval.

PROPOSED PROJECT'S CONSTRUCTION/DEMOLITION IMPACTS AND MITIGATION MEASURES

Construction of Mission Rock would take approximately 23 months and would include site mobilization, grading, construction, and start-up/commissioning. The potential construction/demolition risks are normally associated with exposure to fugitive dust and combustion emissions (i.e. diesel exhaust) and asbestos which is a special case for its status as a common and established human carcinogen requiring special handling and disposal.

Asbestos

Asbestos can be commonly found during demolition of buildings with asbestos within its structure. Asbestos is a mineral fiber that occurs in rock and soil. Because of its fiber strength and heat resistance, it has been used in a variety of building construction materials for insulation and as a fire-retardant. Asbestos has been used in a wide range of manufactured goods, mostly in building materials (roofing shingles, ceiling and floor tiles, paper products, and asbestos cement products), friction products (automobile clutch, brake, and transmission parts), heat-resistant fabrics, packaging, gaskets, and coatings (US EPA, 2012). Structures built before 1980 are more likely to have asbestos containing materials (ACM). Thermal system insulation (formed or spray-on) is the ACM of greatest concern for response and recovery worker exposure (Occupational Safety and Health Administration [OSHA]). Exposure to ACM increases workers' and residences' risk of developing lung diseases, including asbestosis, lung cancer, and mesothelioma.

As noted in the **Waste Management** section, the applicant did not include asbestos in its 2015 Phase I Environmental Site Assessment for the site. Given the existing structures and present use of the site in part as a vehicle salvage/dismantling yard, staff has recommended a contingency handling and disposal plan in the **Waste Management** section. Such removal would take place in compliance with all federal, state, and local requirements, including those for personnel protection. Prior to the demolition of the structures, the applicant would develop the implementation plan for identification, testing, removal, monitoring, and disposal of any hazardous fluids and building materials, including asbestos and lead-based paint, as necessary. The applicant will obtain the asbestos/lead-based paint abatement permit and notification from Ventura County Air Pollution Control District as necessary to comply with Waste Management Condition of Certification **WASTE-5.**

Fugitive Dust

Fugitive dust is defined as dust particles that are introduced into the air through certain soil-disturbing activities such as cultivation, and vehicle operation on open fields, or unpaved roadways. Fugitive dust emissions during construction and demolition of the proposed project could occur from:

- dust entrained during site preparation and grading/excavation at the construction site;
- dust entrained during onsite movement of construction vehicles on unpaved surfaces; and
- wind erosion of areas disturbed during construction activities.

The effects of fugitive dust on public health are covered in the **Air Quality** section of this PSA which includes staff's recommended mitigation measures, including **AQ-SC3** (Construction Fugitive Dust Control) and **AQ-SC4** (Dust Plume Response Requirement) to prevent fugitive dust plumes from drifting past the project boundary. So long as the dust plumes are kept from leaving the project site, there would be no significant concern about fugitive dust adversely affecting public health.

Diesel Exhaust

Emissions of combustion byproducts during construction would result from:

- exhaust from diesel construction equipment used for site preparation, grading, excavation, trenching, and construction of onsite structures;
- exhaust from water trucks used to control construction dust emissions;
- exhaust from portable welding machines, small generators, and compressors;
- exhaust from diesel trucks used to transport workers and deliver concrete, fuel, and construction supplies to construction areas; and
- exhaust from vehicles used by construction workers to commute to and from the project areas.

Construction/Demolition Health Risk Assessment (HRA) for Diesel Exhaust

The primary air toxic pollutant of concern from construction/demolition activities is diesel particulate matter (diesel PM or DPM). Diesel exhaust is a complex mixture of thousands of gases and fine particles and consists of over 40 substances listed by the U.S. Environmental Protection Agency (EPA) as hazardous air pollutants (HAPs) and by ARB as toxic air contaminants. The diesel particulate matter (DPM) is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves particular attention mainly because of its ability to induce serious non-cancer effects and its status as a likely human carcinogen.

Diesel exhaust is also characterized by the ARB as "particulate matter from diesel-fueled engines." The impacts from human exposure would include both short- and long-term health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the EPA as "likely to be carcinogenic to humans" (U.S. EPA 2003).

Based on a number of health effects studies, the Scientific Review Panel (SRP) on Toxic Air Contaminants in 1998 recommended a chronic REL for diesel exhaust particulate matter of five micrograms per cubic meter of air ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$. However, SRP did not recommend a specific value for an acute REL since available data in support of a value was deemed insufficient. Therefore, there is no acute reference exposure level (REL) for diesel particulate matter, and it was not possible to conduct an assessment for its acute health effects. In 1998, the ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved the panel's recommendations regarding health effects (OEHHA 2009, Appendix A). In 2000, ARB developed a "Risk Reduction Plan to Reduce Particulate Matter Emissions From Diesel-Fueled Engines and Vehicles" and has been developing regulations to reduce diesel particulate matter emissions since that time.

A screening HRA for diesel particulate matter was conducted to assess the potential impacts associated with diesel emissions during the construction and demolition activities at Mission Rock. This HRA was based on the annual average emissions of diesel particulate matter (DPM), conservatively assumed to occur over 2.0 years.

Total Risk from Construction of the Mission Rock Power Project

The HRA results for the short-term construction activities show a maximum off-property residential cancer risk (MEIR) of 4.97 in 1 million, mostly due to diesel particulate matter. This impact is below the significance threshold of 10 in 1 million and would also apply to any exposure of field workers on the adjacent farmlands, transit workers, and those using the area for recreation. This risk is less than the Energy Commission staff's significant impact threshold of 10 in a million. Therefore, staff concludes that there would be no significant cancer health risk from the toxic air emissions from construction activities. Any acute or chronic hazard index would be lower than the significance level of 1.0 meaning that there would be no significant acute or chronic non-cancer impacts from construction activities.

Based on the results of the HRA, and considering that (1) the potential exposure to DPM would be sporadic and limited in length and that (2) the predicted increase in cancer risk at the MEIR would be less than the significance thresholds of ten in one million and 1.0, respectively, staff concludes that impacts associated with the DPM from Mission Rock construction and demolition activities would be less than significant.

Conditions of Certification **AQ-SC5** (Diesel-Fueled Engine Control) in the **Air Quality** section of this PSA would ensure that cancer-related impacts of diesel exhaust emissions for the public and off-site workers are mitigated during construction/demolition to the estimated levels of insignificance. The potential levels of criteria pollutants from operation of construction/demolition-related equipment are discussed in staff's **Air Quality** section along with mitigation measures and related conditions of certification. The pollutants of most concern in this regard are particulate matter (PM), carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2).

Mitigation Against Valley Fever

Mission Rock is proposed for an area where the disease of Valley Fever (*Coccidioidomycosis)* is endemic. Construction could disturb some of the top soil that could harbor the *Coccidioides* spores, possibly exposing humans to the risk of Valley Fever. On-site workers, visitors and nearby residents could be exposed from inhaling these fungal spores from wind-blown dust generated from soil excavation work.

To minimize the risk of Valley Fever, the Center for Disease Control and Prevention (CDC) recommends the following preventive measures (CDC 2014):

- Wearing an N95 mask if a person must be in or near a dusty environment, such as a construction zone.
- Avoiding activities that involve close contact with dust including yard work, gardening, and soil digging.
- Using air quality improvement measures indoors such as air filters.
- Taking prophylactic anti-fungal medication if deemed necessary by a person's healthcare provider.
- Cleaning skin injuries well with soap and water, especially if they have been exposed to soil or dust.

The above and other mitigation measures would be assured through the conditions of certification staff recommends in the **Air Quality** and **Worker Safety and Fire Protection** sections. Please, see Conditions of Certification, **AQ-SC3** and **AQ-SC4** and **Worker Safety-9 and Worker SAFETY-10** in those sections.

The potential Valley Fever risk to individuals away from the project site stems from the potential of the spores of the Valley Fever fungus to be released into the air as a result of grading and excavating activities during construction. Because the spores disperse similarly to dust, mitigation measures used to control dust would be effective to control spore dispersal. The applicant proses specific dust mitigation measures in Section 5.1.1.3.6 and Appendix 5.1E) as staff discusses in the **Air Quality** section. As noted, staff's related recommendations in that section are specified in **AQ-SC3** (regarding construction fugitive dust control) and **AQ-SC4** (regarding dust plume response requirement) for the purposes of preventing all fugitive dust plumes from drifting past the project boundary. Keeping the dust plumes within the project boundary would limit potential for exposure to Valley Fever to adjacent residents, farm workers, and members of the public traveling or recreating in proximity to Mission Rock.

PROPOSED PROJECT'S OPERATIONAL IMPACTS AND MITIGATION MEASURES

Emission Sources

The potentially significant emission sources for the proposed project would be: the five natural gas-fired, simple-cycle, water-cooled, combustion turbine generators totaling 275 MW and the diesel fire pump proposed to be operated for a maximum of 50 hours a year for testing and maintenance. Pollutants that could be emitted during operation are listed in **Public Health Table 2** as criteria and non-criteria pollutants. These pollutants include certain volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Criteria pollutant emissions and impacts are examined in staff's **Air Quality** analysis.

The health risk from exposure to each project-related pollutant was assessed using the previously noted "worst case" emission rates and impacts. Maximum hourly emissions were used for example to calculate acute (one-hour) non-cancer health effects, while estimates of maximum emissions on an annual basis were used to calculate cancer and other chronic (long-term) health effects. Details of emission rate and exposure calculations are presented in CAL 2015a, Appendix 5.1D)

Public Health Table 2
The Main Pollutants Emitted from the Proposed Project

Criteria Pollutants	Non-criteria Pollutants
Carbon monoxide (CO)	Acetaldehyde
Oxides of nitrogen (NO_x)	Acrolein
Particulate matter (PM10 and PM2.5)	Ammonia
Oxides of sulfur (SO_2)	Benzene
Volatile Organic Compounds (VOCs)	1,3-Butadiene
	Ethyl Benzene
	Formaldehyde
	Hexane
	Naphthalene
	Polycyclic Aromatic Hydrocarbons (PAHs)
	Propylene
	Propylene oxide
	Toluene
	Xylene
	Diesel PM

Source: CAL 2015a, Table 51D, 2 and Table 5.9-3.

Identified Hazards

Numerous health effects have been linked to exposure to TACs, including asthma, heart disease, Sudden Infant Death Syndrome (SIDS), respiratory infections in children, lung cancer, and breast cancer (OEHHA, 2003). According to the Mission Rock AFC, the toxic air contaminants emitted from the natural gas-fired CTGs include acetaldehyde, acrolein, ammonia, benzene, 1,3-butadiene, ethyl benzene, formaldehyde, naphthalene, polycyclic aromatics, propylene oxide, toluene and xylene. Staff finds these TACs to be typical of the type of project being proposed.

Exposure Assessment

Public Health Table 3 shows how TACs would contribute to the total risk evaluated in the risk analysis. The applicable exposure pathways for the toxic emissions include inhalation, home-grown produce, dermal (through the skin) absorption, soil ingestion, fish ingestion, and mother's milk (CAL, 2015a, Appendix 5.1D). This method of assessing health effects is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) referred to earlier.

The next step in the assessment process was to estimate the project's incremental concentrations using a screening air dispersion model and assuming conditions that would result in maximum impacts. The applicant used the EPA-recommended air dispersion model, AERMOD, along with five years (2009–2013) of compatible meteorological data from the El Rio Monitoring Station run by VCAPCD.

Public Health Table 3
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Non-cancer	Inhalation Cancer	Non-cancer (Chronic)	Non-cancer (Acute)
Acetaldehyde			✔	✔	✔
Acrolein				✔	✔
Ammonia				✔	✔
Benzene			✔	✔	✔
1,3-Butadiene			✔	✔	
Ethyl Benzene			✔	✔	
Formaldehyde			✔	✔	✔
Naphthalene		✔	✔	✔	
Polycyclic Aromatic Hydrocarbons (PAHs)	✔		✔		
Propylene Oxide			✔	✔	✔
Toluene				✔	✔
Xylene				✔	✔

Source: OEHHA / ARB 2015

Dose-Response Assessment

Public Health Table 4 (modified from AFC, section 5.9.2, 3 and Appendix 5.1D) lists the toxicity values used to quantify the cancer and non-cancer health risks from the project's combustion-related pollutants. The listed toxicity values include RELs and the cancer potency factors published in the OEHHA's Guidelines (OEHHA 2003) and OEHHA/ARB Consolidation Table of OEHHA/ARB Approved Risk Assessment Health Values (ARB 2015). RELs are used to calculate short-term and long-term non-cancer health effects, while the cancer potency factors are used to calculate the lifetime risk of developing cancer.

Characterization of Risks from TACs

As described above, the last step in an HRA was to integrate the health effects and public exposure information, provide quantitative estimates of health risks resulting from project emissions, and then characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

The applicant's HRA was prepared using the ARB HARP model, version 2 (ARB, 2015). Emissions of non-criteria pollutants from the project were analyzed using emission factors obtained mainly from the U.S. EPA AP-42 emission factors and ARB's California Air Toxics Emission Factor (CATEF) data base. Air dispersion modeling combined the emissions with site-specific terrain and meteorological conditions to analyze the mean short-term and long-term concentrations in the facility's plume at ground level for use in the HRA.

Ambient concentrations were added and this total was used in conjunction with cancer unit risk factors and RELs to estimate the cancer and non-cancer risks from operations. In the following sub-sections, staff reviews and summarizes the work of the applicant, and evaluates the adequacy of the applicant's analysis.

Public Health Table 4
Toxicity Values Used to Characterize Health Risks

Toxic Air Contaminant	Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$	Chronic Inhalation REL $(\mu g/m^3)$	Acute Inhalation REL $(\mu g/m^3)$
Acetaldehyde	0.010	140	470 (1-hr) 300 (8-hr)
Acrolein	—	0.35	2.5 (1-hr) 0.7 (8-hr)
Ammonia	—	200	3,200
Benzene	0.10	60	1,300
1,3-Butadiene	0.60	20	—
Ethyl Benzene	0.0087	2,000	—
Formaldehyde	0.021	9	55 (1-hr) 9 (8-hr)
Hexane	—	7000	—
Napthalene	0.12	9.0	—
Polycyclic Aromatic Hydrocarbons (PAHs)	3.9	—	—
Propylene Oxide	0.013	3	3100
Toluene	—	300	37,000
Xylene	—	700	22,000

Sources: ARB 2015 and CAL 2015, Appendix 5.1D

The HRA was conducted for the general population, nearby residences, off-site workers and sensitive receptors. The assessment only evaluated the health impact on off-site workers because on-site workers are protected by Cal OSHA's worker exposure limits and are not required to be evaluated under the Hot Spots Program, unless the worker also lives on the facility site or property. The sensitive receptors, as previously noted, are subgroups that would be at greater risk from exposure to emitted air toxics, and include the very young, the elderly, and those with existing illnesses.

Effective August 2012, all air toxics HRAs were to use OEHHA's new Air Toxics Hot Spots Program Risk Assessment Guideline (OEHHA 2012) which recommends breaking down exposure/risk by age group using age-dependent adjustment factors (i.e. age-sensitivity factors) to calculate cancer risk. This new methodology is intended to reflect the fact that exposure varies among different age groups and exposure occurring in early life has a greater impact and should have a higher weighting factor.

Health risks potentially associated with ambient concentrations of carcinogenic pollutants were calculated in terms of excess lifetime cancer risks. The total cancer risk at any specific location is found by summing the contributions from the individual carcinogens. Health risks from non-cancer health effects were calculated in terms of hazard index as a ratio of ambient concentration of TACs to RELs for that pollutant.

The HRA was prepared using the ARB/OEHHA Hotspots Analysis and Reporting Program (HARP) modeling program. Finally, ambient concentrations were used in conjunction with RELs and cancer unit risk factors to estimate health effects which 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 above method of assessing health effects is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) referred to earlier, and results in the following health risk estimates. As noted by the applicant (CAL 2015a Appendix 5.1D), HARP2 allows for treating all receptors as residential receptors which allows for the conservative assumption that the maximally impacted receptor (MIR) would represent the highest risk and no other receptor would show risks higher than that for the MIR. Worker risk values could be scaled directly from the 70-year residential risk values as OEHHA recommends.

Impacts

The most significant result from the HRA is the numerical cancer risk for the maximally exposed individual (MEI) which is for the individual at the maximum impact location. The project-related risk is unlikely to be higher anywhere else in the project area.

The risk estimates from the applicant's assessment (CAL 2015a Section 5.9 and Appendix 5,1D) are presented in **Public Health Table 5**. As shown, the maximum acute hazard index at the point of maximum impact is 0.00179 while the value for chronic impacts is 0.00102. Both are well below the significance level of 1.0, indicating that no short- or long-term adverse health effects are expected. The maximum individual cancer risk is 5.24 in one million which is also below the noted significance level.

Public Health Table 5
Operation Hazard/Risk at Point of Maximum Impact

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Non-cancer	0.00179	1.0	No
Chronic Non-cancer	0.00102	1.0	No
Individual Cancer at MEIR	5.24 in 1 million	10 in 1 million	No

Source: CAL 2015a. Modified Tables on pp 5.1D8 through 5.1D 10.

Cooling Tower-Related Risk of Legionnaires' Disease

In addition to being a source of toxic air contaminants, there is a possibility of bacterial growth in the project's six-cell cooling tower. The organism of specific concern in this case is Legionella, the causative agent for Legionellosis or Legionnaire's Disease.

Legionella is a bacterium that is ubiquitous in natural aquatic environments and is also widely distributed in man-made water systems. 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 associated with outbreaks of Legionellosis since cooling water systems and their components can amplify and disseminate aerosols containing Legionella.

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. Staff notes that most water treatment programs are designed to minimize scale, corrosion, and biofouling, and not necessarily to control Legionella.

Effective mitigation measures should include a cleaning and maintenance program to minimize the accumulation of bacteria, algae, and protozoa that may contribute to nutritional needs of Legionella. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE 1998) emphasizes the need for such programs in its specifications for Legionellosis prevention. Also, the Cooling Tower Institute has issued Guidelines for the Best Practices for Control of Legionella (CTI 2000). Preventive maintenance includes having effective drift eliminators, periodically cleaning the system as appropriate, maintaining mechanical components in working order, and maintaining an effective water treatment program with appropriate biocide concentrations.

Staff's recommended Condition of Certification **Public Health-1** is intended to ensure the effective maintenance and bactericidal action necessary during the operation of Mission Rock's cooling tower. This condition would specifically require the project owner to prepare and implement a cooling water management plan to ensure that bacterial growth is kept to a minimum in the cooling tower. With the use of an aggressive antibacterial program, coupled with routine monitoring and biofilm removal, the chances of Legionella growth and dispersal would be reduced to insignificance.

CUMULATIVE IMPACTS

As previously noted, the maximum impact location would be the spot where pollutant concentrations for the proposed Mission Rock would theoretically be highest. Even at this location, staff does not expect any significant change in lifetime risk to any person, given the calculated incremental cancer risk of 5.24 in one million, which staff regards as not potentially contributing significantly to the previously noted average lifetime individual cancer risk of 300,000 in one million for the average American. Modeled facility-related residential risks are much lower for more distant locations. Given the previously noted conservatism in the utilized calculation method, the actual risks would likely be much smaller.

The worst-case long-term non-cancer health impact from the project (represented as a chronic hazard index of 0.00102 is well below staff's significance level of 1.0 at the location of maximum impact. At this level, staff does not expect any cumulative health impacts to be significant. As with cancer risk, long-term hazard would be lower at all other locations and cumulative impacts at other locations would also be less than significant.

A project's operation would result in a significant adverse cumulative impact if its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, § 15130). As for cumulative impacts for hazards and health risks, if the implementation of the proposed project, as well as the past, present, and probable future projects, would not cumulatively contribute to regional hazards, then a project's cumulative impacts could be considered a "less than cumulatively considerable" impact.

The maximum cancer risk and non-cancer hazard index (both acute and chronic) for operations emissions from the project estimated independently by the applicant, staff, and the VCAPCD (VCAPCD 2016a and VCAPCD 2016c) are all below levels of corresponding significance. While air quality cumulative impacts could occur with sources within a six-mile radius, cumulative public health impacts are usually not significant unless the emitting sources are extremely close to each other, within a few blocks, not miles.

The following is a summary of the most important elements of HRA for Mission Rock

- using the latest version of ARB/OEHHA Hotspots Analysis and Reporting Program Version 2 (HARP2)[4], which incorporates methodology presented in OEHHA's 2015 Guidance document;
- using emission levels based upon concurrent operation of all the main on-site sources, including the five simple-cycle natural-gas-fired turbines, the cooling tower, and, the one diesel emergency diesel engine with a 50-hour per year limit on operation for testing and maintenance;
- using operating scenarios in which the new gas turbines startups, shutdowns, and commissioning were included;
- using exposure pathways that included inhalation, soil ingestion, fish ingestion, dermal absorption, home grown produce, and mother's milk;
- using the local meteorological data, local topography, grid, residences and sensitive receptors, source elevations, and site-specific as input parameters;
- using emission factors and toxicity values from OEHHA/ARB.

[4] HARP2 can be downloaded from ARB's HARP website. http://www.arb.ca.gov/toxics/harp/harp.htm

Cancer Risk at the Point of Maximum Impact (PMI)

The most significant result of a HRA is the numerical cancer risk for the maximally exposed individual (MEI) which is the individual located at the point of maximum impact (PMI) and risks to the MEI at a residence (MEIR). As previously noted, human health risks associated with emissions from the proposed project are unlikely to be higher at any other location than at the PMI. Therefore, if there is no significant impact associated with concentrations at the PMI, it can be reasonably assumed that there would not be significant impacts in any other location in the project area.

The cancer risk to the MEI at the PMI is referred to as the Maximum Incremental Cancer Risk (MICR). However, the PMI (and thus the MICR) is not necessarily associated with actual exposure because in many cases, the PMI is in an uninhabited area. Therefore, the MICR is generally higher than the maximum residential cancer risk. MICR is based on 24 hours per day, 365 days per year, 30-year lifetime exposure. The potential exposure level for off-site nonresidential workers and those involved in recreational activities would thus be less. As shown in **Public Health Table 5**, total worst-case individual cancer risk is 5.24 in one million at the PMI. The PMI for impacts from operation is at the fence line. This risk is below the significance level, ten in one million, indicating that no significant adverse cancer risk is expected.

Chronic and Acute Hazard Indices

The screening HRA for the project included emissions from all sources and resulted in a maximum chronic Hazard Index (HI) of 0.0012 and a maximum acute HI of 0.00179 (CAL 2015a, Appendix 5.1D). As **Public Health Table 5** shows, both acute and chronic hazard indices are less than 1.0, indicating that no short- or long-term adverse health effects such as asthma and other respiratory effects are expected.

Land Uses in the Area Surrounding Mission Rock including Farming

Concerns have been raised that farming activities including pesticide use and exposures would contribute to health risks to farm workers and local residents. Pesticide use is regulated by CA Department of Pesticide Regulation and monitored by ARB. The applicable regulations are intended to ensure the safe application of each pesticide whose use might produce background levels that could be measurable. Since staff's analysis has shown that Mission Rock construction and operation would lead to toxic emissions below levels of potential health significance, staff does not regard the facility as potentially contributing significantly to any health effects from existing pesticide use in the area.

Modeled facility-related risks would be much lower for more distant locations. Given the previously noted conservatism in the calculation method used, the actual risks would likely be much smaller. Therefore, staff does not consider the incremental risk estimate from Mission Rock's operation as suggesting a potentially significant contribution to the area's overall or cumulative cancer risk that includes the respective risks from the background pollutants from all existing area sources.

ENVIRONMENTAL JUSTICE

Public Health impacts would not contribute to disproportionate impacts on the EJ population. Also, public health impacts from the project on the EJ population would be less than significant.

COMPLIANCE WITH LORS

The applicant has conducted a HRA for the proposed Mission Rock Energy Center and found no potentially significant adverse impacts for any receptors in the project area. In arriving at this conclusion, staff notes that the analysis complies with all directives and guidelines from the Cal/EPA Office of Environmental Health Hazard Assessment and the California Air Resources Board. The applicant's and staff's assessments are biased towards protection of public health and take into account the most sensitive individuals in the population. Using very conservative (health-protective) exposure and toxicity assumptions, the analyses demonstrate that members of the public potentially exposed to toxic air contaminant emissions of this project, including sensitive receptors such as the elderly, infants, and people with pre-existing medical conditions, would not experience any acute or chronic significant health risk or any significant cancer risk as a result of that exposure.

Staff incorporated every conservative assumption called for by state and federal agencies responsible for establishing methods for analyzing public health impacts. The results of that analysis indicate that there would be no direct or cumulative significant public health impact on any population in the area. Therefore, staff concludes that construction and operation of the project would comply with all applicable LORS regarding long-term and short-term project impacts in the area of public health.

CONCLUSIONS AND RECOMMENDATIONS

Staff has determined that toxic air emissions from construction and operation of the proposed natural gas-burning Mission Rock Energy Center are at levels that do not require mitigation beyond that already proposed by the applicant and air quality unit staff. The conditions for ensuring compliance with all applicable air quality standards are specified in the **Air Quality** section for the area's criteria pollutants. Implementation of staff's proposed public health condition of certification to reduce the likelihood of Legionella growth would ensure that the risk of Legionella growth and dispersion is reduced to levels of insignificance.

If the proposed project were to be approved, staff would recommend the following Condition of Certification to address the potential risk from Legionella in the cooling tower.

PROPOSED CONDITION 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.

Verification: At least 30 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the CPM for review and approval.

ACRONYMS

ACM	Asbestos Containing Materials
AFC	Application for Certification
ARB	California Air Resources Board
Btu	British thermal unit
CAA	Clean Air Act (Federal)
CAL/EPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTGs	Combustion Turbine Generators
CO	Carbon Monoxide
CO2	Carbon Dioxide
DPMs	Diesel Particulate Matter
FSA	Final Staff Assessment (this document)
HAPs	Hazardous Air Pollutants
HARP	Hot Spots Reporting Program
HARP2	Hot Spots Reporting Program Version 2
HEPA	High Efficiency Particulate Air
HRA	Health Risk Assessment
HI	Hazard Index
Lbs.	Pounds
LORS	Laws, Ordinances, Regulations and Standards
MACT	Maximum Achievable Control Technology
MEIR	Maximally Exposed Individual Resident

MEIW	Maximally Exposed Individual Worker
MICR	Maximum Individual Cancer Risk
mg/m3	Milligrams per Cubic Meter
MMBtu	Million British thermal units
MW	Megawatts (1,000,000 Watts)
NO	Nitric Oxide
NO2	Nitrogen Dioxide
NO3	Nitrates
NOx	Oxides of Nitrogen or Nitrogen Oxides
O2	Oxygen
O3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter
PM2.5	Particulate Matter less than 2.5 microns in diameter
PMI	Point of Maximum Impact
Ppm	Parts per Million
ppmv	Parts Per Million by Volume
Ppmvd	Parts Per Million by Volume, Dry
PSA	Preliminary Staff Assessment
RELs	Reference Exposure Levels
SIDS	Sudden Infant Death Syndrome
SO2	Sulfur Dioxide
SO4	Sulfate

Sox	Oxides of Sulfur
SRP	Scientific Review Panel
TACs	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TDS	Total Dissolved Solids
tpy	Tons per Year
VCAPCD	Ventura County Air Pollution Control District
VOCs	Volatile Organic Compounds

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PUBLIC HEALTH APPENDIX A

Existing Public Health Concerns

1.0 INTRODUCTION

The purpose of this assessment is to identify the status of cancer and respiratory diseases--using asthma as the primary metric--and also evaluate Chronic Obstructive Pulmonary Disease (COPD) and Valley Fever within the air basin where the proposed Mission Rock site and Ventura County are located. This would allow staff to compare the prevalence and mortality from respiratory disease and cancer regarding the project's impact area and other areas in California where there are similar concerns about air emissions.

2.0 DEMOGRAPHICS OF VENTURA COUNTY AND CALIFORNIA

The United States Census Bureau (2015[5]) reports population characteristics with regards to age and racial/ethnic makeup of Ventura County and of the State of California as follows:

Age Related Characteristics	Ventura County	California
Population, 2015	850,536	39,144,818
Persons <5 years old, 2015	6.3%	6.4%
Persons <18 years old, 2015	23.8%	23.3%
Persons 65 and over, 2015	14.1%	13.3%
Racial/Ethnic Characteristics	**Ventura County**	**California**
White persons, 2015	84.6%	72.9%
Black persons, 2015	2.3%	6.5%
American Indian/Alaska native, 2015	1.9%	1.7%
Asian, 2015	7.6%	14.7%
Native Hawaiian/Pacific Islander, 2015	0.3%	0.5%
Hispanic or Latino, 2015	42.3%	38.8%

3.0 VENTURA COUNTY HEALTH RANKING AND AIR POLLUTION

According to the County Health Rankings and Roadmaps website (www.countyhealthrankings.org),

[5] http://www.census.gov/quickfacts/table/PST045215/06111,06

Ventura county is ranked 8th out of 57[6] counties in California for overall health outcomes which include premature death and morbidity due to poor or fair health, poor physical health days, poor mental health days and low birth weight. Note that the lower the number for the ranking, the better the health status. Likewise, Ventura County is ranked 15th out of 57 counties for overall health factors which include smoking, obesity, physical inactivity, excessive drinking, motor vehicle crash death rate, sexually transmitted diseases (STDs) and teen birth rate. For its physical environment (air pollution, particulate matter and ozone days[7], access to recreational facilities, limited access to healthy foods and fast food restaurants), Ventura County ranks 27th out of 57 of California counties (County Health Rankings 2016).

The American Lung Association (ALA 2016) State of the Air 2016 website (ALA 2016) gave Ventura County an "F" grade for ozone, a "B" grade for 24-hour particle pollution and a "Pass" grade for annual particle pollution. In order to determine grades for counties, US EPA data in 2012, 2013, and 2014 at monitoring sites throughout the US was used. In the analysis, air quality is color-coded and reported as Orange (unhealthy for sensitive populations), Red (unhealthy) and Purple (very unhealthy). In the data from 2012-2014, Ventura County was coded Orange for 54 days/year for ozone, Red for 2 days/year and Purple for 0 days/year. With regards to 24-hour particulate levels, Ventura County was Orange for 1 day/year, Red for 0 days/year and Purple for 0 days/year.

Staff calculated the percentages of at-risk groups in both Ventura County and California. The percentages of at-risk groups between Ventura County and California are very similar, except for poverty estimates. As for ranking, out of all California 58 counties Ventura County is ranked 40th in pediatric asthma, 19th in adult asthma, and 25th in COPD[8]. Note that the lower the numerical value for the ranking, the fewer the number of people in each at-risk group.

[6] Alpine County is not ranked.

[7] In the context of the County Health Rankings, an "ozone day" is a day in which air quality is unhealthy for sensitive populations. In the comparison with other California counties, the annual number of unhealthy air quality days due to ozone was compared along with the other aspects of physical environment (air pollution, particulate matter and ozone days, access to recreational facilities, limited access to health foods and fast food restaurants). This information was obtained from the website www.countyhealthrankings.org/health-factors/environmental-quality. This website says that several measures can be used to represent air quality, the most common being annual average values for fine particulate matter and ozone. In the County Health Rankings, they use two measures to represent environmental quality: annual number of days that air quality was unhealthy for sensitive populations due to (1) fine particulate matter and (2) ozone concentrations. Furthermore, researchers used an air quality model to estimate peak fine particulate matter and ozone concentrations for each day in the year and, by comparing to national ambient air quality standards (NAAQS), they estimated the number of days that the air quality was poor for sensitive populations due to these contaminants.

[8] The lower the ranking, the fewer the numbers of people in each group are at-risk.

At-risk Groups in Ventura County and California

		Ventura County	California	Ventura County's California Ranking
Total Population		846,178 (100%)	38,629,264 (100%)	46th
Under 18		204,568 (24.18%)	9,113,908 (23.59%)	40th
65 & Over		115,000 (13.59 %)	4,968,418 (12.87%)	27th
Lung Diseases	Pediatric Asthma	18,120 (2.14%)	810,765 (2.09%)	40th
	Adult Asthma	50,182 (5.93%)	2,297,615 (5.92%)	19th
	COPD	32,154 (3.8%)	1,425,401 (3.67%)	25th
Cardiovascular Disease		47,741 (5.64%)	2,099,027 (5.41%)	27th
Diabetes		68,697 (8.12%)	3,031,004 (7.81%)	26th
Poverty Estimate		95,912 (11.33%)	6,253,422 (16.12%)	11th

4.0 CANCER

4.1 CANCER IN THE UNITED STATES

Cancer is the second leading cause of death in the United States (following death due to heart disease), and is the cause of 1 of every 4 deaths in the nation (ACS 2016a). It has been estimated that on January 1, 2014, there were nearly 14.5 million Americans (children and adults) alive who were either cancer survivors or current cancer patients (ACS 2014). In 2016, the American Cancer Society (ACS) estimates that about 188,800 of the estimated 595,690 cancer deaths in the US were caused by cigarette smoking and thus could be prevented (ACS 2016a).

4.1.1 Cancer Incidence Rates

The top three leading sites of new cancer cases for males are prostate, lung/bronchus and colon/rectum. For women the top three leading sites of new cancer cases are breast, lung/bronchus and colon/rectum. (ACS 2016a, Figure 3).

Incidence rates in the U.S. for all cancers in 2008-20012 were highest among Non-Hispanic black males (529.3 cases per 100,000 population compared to 528.9 per 100,000 for Non-Hispanic white males) and Non-Hispanic white females (436.2 cases per 100,000 population compared to 408.1 per 100,000 for Non-Hispanic black females. As for lung and bronchus cancer, incidence rates were highest for Non-Hispanic black males (93.4 per 100,000 population) and Non-Hispanic white females (58.7 per 100,000) (ACS 2016a, Table 9).

4.1.2 Cancer Death Rates

The top three leading sites of cancer-causing death for males are lung/bronchus, prostate, and colon/rectum. For women the top three leading sites of cancer-causing deaths are lung/bronchus, breast, and colon/rectum (ACS 2016a, Figure 3).

The American Cancer Society also reported cancer death rates in the U.S. for 2008-2012. Non-Hispanic black males and females had the highest cancer death rates for cancers of all sites (267.7 per 100,000 for Non-Hispanic black males compared to 210.6 per 100,000 for Non-Hispanic white males and 170.4 per 100,000 for Non-Hispanic black females compared to 149.2 for Non-Hispanic white females). As for lung and bronchus cancer, death rates were highest for Non-Hispanic black males (74.9 per 100,000 population) and

Non-Hispanic white females (41.4 per 100,000) (ACS 2016a, Table 9). Cancer death rates are declining for all four of the most common cancer types – lung, colorectal, breast, and prostate (ACS 2016a, Figure 1 and Figure 2).

4.2 CANCER IN CALIFORNIA

4.2.1 Cancer Incidence Rates

More than 1,459,000 Californians who are alive today have a history of cancer. In 2016, it is estimated that 173,200 Californians would be diagnosed with cancer. In 2008-2012, the overall cancer incidence rate (the number of new cases per 100,000 population) in the state was lower compared to the rest of the nation. California cancer incidence rates for Asians/Pacific Islanders, African Americans, and non-Hispanic whites were between 2 percent and 4 percent lower than the rest of the country. Hispanics in California had a nearly 11 percent lower incidence rate than other Hispanics in the nation. Cancer incidence rates in California declined by 14 percent between 1988 and 2013 (ACS 2016b). African American males in California have the highest cancer incidence rate, followed by non-Hispanic white males. Non-Hispanic white females have the highest cancer incidence rate among women, followed by African American females (ACS 2016b, Figure 8).

Lung Cancer

As for lung cancer, in 2013, 16,636 new cases of lung cancer were diagnosed, accounting for about 10 percent of all cancer diagnoses in California. The incidence rate has been declining since the mid-1980s in men, but only since the mid-2000s in women. From 1988 to 2013, lung cancer incidence rates in California decreased by 2.5 percent per year in men and by 1.1 percent per year in women. California has experienced a much larger decrease in lung cancer incidence rates than the rest of the US, in large part due to the success of the state's tobacco control initiative (ACS 2016b).

Between 2006 and 2010, the lung and bronchus incidence rate for males in California was 60.4 new cases per 100,000 males per year. For females, the rate was slightly lower, with an incidence rate of 44.4 new cases per 100,000 females. With respect to race/ethnicity, African-American males and females as well as non-Hispanic white females had the highest incidence rates (84.2, 53.7 and 53.8 new cases per 100,000 persons, respectively) in the state (CCR 2014).

4.2.2 Cancer Death Rates

Cancer accounts for nearly 1 of every 4 deaths in California. In 2016, it is estimated that 59,060 Californians would die of cancer. Cancer mortality rates declined by 27 percent between 1988 and 2013. Mortality rates declined for all four major racial/ethnic groups in the state (ACS 2016b).

African American males in California have the highest cancer mortality rate, followed by non-Hispanic white males. African American females also have the highest cancer mortality rate among women, followed by non-Hispanic white females (ACS 2016b, Figure 9)

Lung Cancer

Lung cancer is the leading cause of deaths from cancer for both men and women. Lung cancer caused a total of 12,408 deaths (6,482 for males and 5,926 for females), accounting for about 22 percent of all cancer deaths for males and 21 percent of all cancer death for females in California in 2013 (ACS 2016b, Table 2). From 1988 to 2013, rates decreased 2.7 percent per year for men and 1.4 percent per year for women. Gender differences in lung cancer mortality reflect historical differences in patterns of smoking uptake and cessation over the past 50 years (ACS 2016b).

Between 2006 and 2010, the lung and bronchus mortality rate for males was 47.1 deaths per 100,000 males per year. For females, the rate was slightly lower, with a mortality rate of 32.2 deaths per 100,000 females per year. With respect to race/ethnicity, African-American males and females as well as non-Hispanic white females had the highest mortality rates (69.5, 40.6 and 39.1 deaths per 100,000 persons, respectively) in the state (CCR 2014).

4.3 Cancer in Ventura County

Members of the public have raised concerns that farming activities including pesticide use and exposures would contribute to health risks to farm workers and local residents. Pesticides can cause many types of cancer in humans. Some of the most prevalent forms include leukemia, non-Hodgkin's lymphoma, brain, bone, breast, ovarian, prostate, testicular and liver cancers[9].

4.3.1 Cancer Incidence Rates

In 2013, there were 3,659 observed new cancer cases in Ventura County, and 351 observed new lung cancer cases (ACS, CDPH and CCR 2016b, Table 4).

An organization titled Health Matters in Ventura County (http://www.healthmattersinvc.org/index.php) provided lung and bronchus cancer, breast and prostate incidence rates. This indicator shows age-adjusted incidence rates for lung and bronchus cancers, breast cancers and prostate cancers in cases per 100,000 population. All these three cancer incidence rates in Ventura County show a general downward trend over time. Compared to all other counties in California, lung and bronchus cancer incidence rates in Ventura County fell into the "green" area, representing the "best" 50th percentile while both breast and prostate cancer incidence rates fell into the "yellow" area, representing the 50th to 25th quartile. The indicators are compared below:

[9] http://www.toxicsaction.org/problems-and-solutions/pesticides

Cancer Incidence Rates, 2009-2013 (age-adjusted per 100,000 residents)

Cancers	Ventura County	California	U.S.
Lung and Bronchus	41.5	46.5	62.4
Breast	131.8	121.4	123.3
Prostate	116.4	118.7	123.1

Data source: National Cancer Institute, 2009-2013

4.3.2 Cancer Death Rates

In 2013, there were 1,294 observed cancer deaths in Ventura County, and 241 observed lung cancer deaths (ACS, CDPH and CCR 2016b, Table 5).

Health Matters in Ventura County (http://www.healthmattersinvc.org/index.php) also provided age-adjusted death rates due to lung cancer. The age-adjusted death rates due to lung and bronchus, breast and prostate cancers in Ventura County have a general downward trend over time. When compared to all other counties in California, all these three cancer death rates in Ventura County fell into the "green" area, representing the "best" 50th percentile. The indicators show the age-adjusted death rate per 100,000 population due to cancers and are compared below:

Death Rates due to Cancer, 2012-2014 (age-adjusted per 100,000 residents)

Cancers	Ventura County	California	U.S.
Lung and Bronchus	26.9	31.7	46*
Breast	19.8	20.3	20.7**
Prostate	17.8	19.3	19.2**

Data source: California Department of Public Health, 2012-2014
*in 2009-2013
**in 2013

Cancer statistics in Ventura County at the zip code level are not available on Health Matters in Ventura County (http://www.healthmattersinvc.org/index.php).

4.4 Childhood Cancer (age 0-14 years)

4.4.1 United States

Childhood cancer does not encompass one single disease but rather represents a wide group of different malignancies that vary by histology, origin site, race, sex and age. The causes of cancer in children are unknown. Consistent findings have not been reported that link environmental exposures or parental occupations to childhood cancer. Only a few known conditions or agents have been determined to explain a small percentage of specific cancers in children (Down syndrome, ionizing radiation from accidents or radiation therapy, certain chemotherapeutic agents, AIDS, specific genetic syndromes; National Cancer Institute, NCI 2012).

Major categories of pediatric cancer include leukemia (31% of all childhood cancers, including benign brain tumors), brain and other central nervous system tumors (25

percent), neuroblastoma (6 percent), Wilms tumor (5 percent), non-Hodgkin lymphoma (4 percent), Hodgkin lymphoma (4 percent), rhabdomyosarcoma (3 percent), osteosarcoma (3 percent), retinoblastoma (2 percent), and Ewing sarcoma (1 percent) (ACS, CDPH and CCR 2016b).

However, new data from the Centers for Disease Control and Prevention shows that during the 1999–2014 period, brain cancer replaced leukemia as the most common cancer-causing death in children and adolescents aged 1–19 years. In 2014, brain cancers accounted for nearly 30 percent of the nation's nearly 2,000 cancer deaths for children and young adults. The key findings from the research include (Curtin *et al.* 2016):

- During 1999–2014, the cancer death rate for children and adolescents aged 1–19 years in the United States declined 20 percent, from 2.85 to 2.28 per 100,000 population.
- The cancer death rate for males aged 1–19 years in 2014 was 30 percent higher than for females.
- Declines in cancer death rates during 1999–2014 were experienced among both white and black persons aged 1–19 years and for all 5-year age groups.
- During 1999–2014, brain cancer replaced leukemia as the most common cancer causing death among children and adolescents aged 1–19 years, accounting for 3 out of 10 cancer deaths in 2014.

The American Cancer Society (ACS 2016) estimates that about 10,380 new cases of childhood cancer will occur in the United States among children ages 0-14 in 2016, with an estimated 1,250 deaths. Childhood cancer incidence rates have slowly increased by 0.6 percent per year since 1975. Childhood cancer death rates declined by a total of 66 percent from 1969 (6.5 per 100,000) to 2012 (2.2 per 100,000), largely due to improvements in treatment and high rates of participation in clinical trials. From 2003 to 2012, the death rate declined by 1.3 percent per year. Cancer is the second leading cause of death in children aged 1 to 14, after accidents (ACS 2016ac).

4.4.2 California

More than 1,700 children and young adults under the age of 20 are diagnosed with cancer in California each year. Of these, more than 1,000 are between 0-14 years. When compared to the rest of the nation, the cancer incidence rate among children 0-14 years in the state between the years 2008 and 2012 was the same among non-Hispanic whites, 4 percent higher among African Americans, 3 percent higher among Hispanics, and 13 percent higher among Asians/Pacific Islanders (ACS, CDPH and CCR 2016b).

Although accidents kill about three times more children than cancer, an estimated 1 of every 265 children will develop some form of cancer before they are 20 years old. Mortality rates for childhood cancer in California have declined by 64 percent over the past four decades, from 7.3 (per 100,000) in 1970 to 2.6 in 2013. The substantial progress in reducing childhood cancer mortality is largely attributable to improvements in treatment and high rates of participation in clinical trials (ACS, CDPH and CCR 2016b).

Cancer incidence among children ages 0-14 in California in 2013 are given for race/ethnicity, per 100,000 age-adjusted (ACS, CDPH and CCR 2016b, Table 12)

	Cancer Cases	Cancer incidence rate
Non-Hispanic White	429	19.7
Non-Hispanic Black	69	14.4
Hispanic	611	15.3
Asian/Pacific Islander	126	13.6

4.4.3 Ventura County

Kidsdata.org, a program of the Lucile Packard Foundation for Children's Health, promotes the health and well-being of children in California by providing an easy-to-use resource that offers high-quality, wide-ranging, local data to those who work on behalf of children. The trends of childhood cancer for both Ventura County and California have been slightly increasing from 2000 to 2012. The numbers of new cancer diagnoses per 100,000 children/youth ages 0-19 over a 5-year period for both Ventura County and California from 2008 to 2012 are compared below:

Childhood Cancer Diagnoses Data, 2008-2012

Locations	Number	Rate per 100,000
United States	N/A	N/A
California	9,118	17.5
Ventura County	242	20.6

Data Source: Surveillance, Epidemiology, and End Results (SEER) Program. (2015). Research data (1973-2012). National Cancer Institute; U.S. Cancer Statistics Working Group. (2014). United States cancer statistics: 1999-2011 incidence and mortality web-based report. Centers for Disease Control and Prevention and National Cancer Institute (Jul. 2015).

5.0 ASTHMA

Asthma in Ventura County is evaluated here using results of California and county health surveys and other data sources. Asthma is a chronic lung disease that makes it harder to move air in and out of the lungs, making breathing difficult.

California Breathing, a division of the Environmental Health Investigations Branch of the California Department of Public Health, reported asthma prevalence for 2014 in county asthma profiles posted online (www.californiabreathing.org/asthma-data/county-asthma-profiles, California Breathing 2016). Data on lifetime and active asthma prevalence in California residents were collected in the 2014 California Health Interview Survey (CHIS) (California Breathing 2016). Pertinent data collected on lifetime and active asthma prevalence are summarized below:

Lifetime Asthma Prevalence by Age (2014)

	Ventura County	California
Children (0-4 yrs)	n/a	9.7%
Children (ages 5-17)	20.5%	17.1%
Adults (ages 18-64)	11.1%	14%
Adults (> 65 yrs)	9.8%	12%
All Ages	12.3%	14.1%

Active Asthma Prevalence by Age (2014)

	Ventura County	California
Children (0-4 yrs)	n/a	6.3%
Children (ages 5-17)	n/a	11.6%
Adults (ages 18-64)	6.5%	7.6%
Adults (> 65 yrs)	n/a	7.7%
All Ages	6.0%	8.3%

California Department of Health Service (CDHS) reported lifetime asthma prevalence for counties in California based on California Health Interview Survey (CHIS) 2001-2003. For all counties in California, the asthma lifetime prevalence from 2001 to 2003 was 12.4 percent for all counties and 11.9 percent for Ventura County (Milet *et al.* 2007, page 21). In 2010, 13.1 percent of adults and 12.5 percent of children had been diagnosed with asthma at some point in their lives (lifetime asthma); 7.9 percent of adults and 7.4 percent of children had current asthma (Milet *et al.* 2013, page 4).

Health Matters in Ventura County (http://www.healthmattersinvc.org/index.php), provided by Ventura County Public Health, is a web-based source of population data and community health information. The percentage of people who have ever been told by a health care provider that they have asthma or lifetime asthma (adults with Asthma, children and teens with Asthma) are summarized below:

Lifetime Asthma (2013-2014)

	Ventura County	California	U.S.
Adults	10.7%	13.9%	13.8%
Children and Teens	8.3%	15.2%	n/a

Data source: California Health Interview Survey, 2013-2014

The trends of lifetime asthma were also reported on Health Matters in Ventura County. For adults, the percentage with asthma has been falling from 2007-2012. After an increase during 2012-2013, the percentage continued to fall. As for children and teens, the percentage with asthma increased slightly from 2009 to 2011, and then fell afterwards.

Conclusion

The lifetime asthma prevalence rates reported by California Breathing, CDHS, and Health Matters in Ventura County are similar. Generally speaking, the lifetime asthma prevalence rates of Ventura County are slightly lower than corresponding rates for California. The numbers of asthma hospitalization & emergency department visits reported by Health Matters in Ventura County are similar to the ones reported by the California Office of Statewide Health Planning and Development (OSHPD) and the California Department of Public Health, Environmental Health Investigations Branch. According to all these three sources, the numbers of asthma hospitalization & emergency department visits of Ventura County are lower than corresponding cases in California.

6.0 CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

Chronic Obstructive Pulmonary Disease or COPD is a group of lung diseases that includes emphysema and chronic bronchitis. COPDs are characterized by airflow obstruction in the lungs that interferes with normal breathing. Eighty-two percent of deaths due to COPD are caused by cigarette smoking. According to the American Lung Association (ALA), COPD is the third leading cause of death in the United States (with an age-adjusted death rate of 41.2 deaths per 100,000 population in 2009), behind cancer and heart disease. COPD is the only lung disease with a higher age-adjusted death rate in Whites than in African-Americans (ALA 2013). The Healthy People 2020 target rate for COPD hospitalizations is 50.1 per 10,000 and 56.8 per 10,000 for COPD emergency department visits (HHS 2014).

Health Matters in Ventura County (http://www.healthmattersinvc.org/index.php) provided information for COPD within the population served by Medicare (Medicare Population). This indicator shows the percentage of Medicare beneficiaries who were treated for chronic obstructive pulmonary disease (COPD) in 2014. In Ventura County, 7.8 percent of Medicare beneficiaries were treated for COPD; in California, 8.8 percent of Medicare beneficiaries were treated for COPD.

7.0 VALLEY FEVER (COCCIDIOIDOMYCOSIS)

Valley Fever is a fungal infection that is caused by *coccidioides immitis* organisms that are found in the soil of dry, low rainfall areas. According to the Center for Disease Control and Prevention (CDC) Coccidioidomycosis is considered endemic in parts of Ventura County (CDC 2015). Spores of the fungus can become airborne due to soil disruptions like farming, construction and wind, and can be carried by the wind for miles. If the spores are breathed into the lungs, they can cause Valley Fever. It is estimated that up to half of the people living in areas where Valley Fever is endemic have been infected. Filipinos, Hispanics, African-Americans, Native Americans and Asians are more susceptible to serious infection than whites, as are women in their third trimester of pregnancy, new mothers, people with weakened immune systems and the elderly (Mayo Clinic 2012).

Mild cases of Coccidioidomycosis, with symptoms appearing 1-3 weeks after exposure, present with flu-like symptoms of fever, chest pain and coughing and usually resolve on their own. In cases where these symptoms are more severe, the course of the disease

varies and it may take months to fully recover, with the severity of the disease usually depending on the overall health of the exposed person. The initial infection may progress to a chronic pneumonia with symptoms of low-grade fever, weight loss, cough, chest pain and nodules in the lungs. In its most severe form, the infection spreads beyond the lungs to the skin, bones, liver, brain, heart, and membranes that protect the brain and spinal cord (meninges). The most severe and deadly complication is meningitis, an infection of the meninges (Mayo Clinic 2012).

In Ventura County, Valley Fever tends to be more prevalent in the hotter and dryer Simi Valley area. There was a Coccidioidomycosis outbreak in Ventura County following the January 1994 earthquake, centered in Northridge, CA, The factors that increased the risk for acquiring acute Coccidioidomycosis was identified to be the spores spread in dust clouds generated by the earthquake (Schneider *et al.* 1997). There was another incidence in 2004 that may be attributed to wildfires in the area and ensuing landslides. In a recent study of 15 counties impacted by Valley Fever between 2007 and 2011, Ventura County had 300 reported cases, with 65 of those occurring in Oxnard. Ventura County ranked ninth in the total number or cases reported and in the mean incidence rate for the five year study period. There was no observed tendency of the number of cases to increase over time (MacLean 2014). For comparison, the 2010 rate reported for the State of California was 11.5 cases per 100,000 (CDPH 2011).

8.0 DISCUSSION OF PUBLIC HEALTH IN VENTURA COUNTY

Ventura County is ranked 8th best among California's 57 counties for overall health status with no health data available for Alpine County.

The incidence rates of cancer in Ventura County are lower for lung and bronchus cancer and prostate cancers, and higher for breast cancer compared to the rates in the State of California. Cancer mortality rates of all cancer sites are lower in Ventura County than in the State of California.

Cancer is the leading cause of death by disease in children in California and the United States, with the most common cancers being leukemia and brain and other central nervous system tumors. Within the past 30 years or so, the incidence of childhood cancer has been rising slightly while the mortality rate is declining. The trends of childhood cancer for both Ventura County and California have been slightly increasing from 2000 to 2012. The incidence rate of childhood cancer in Ventura County is higher than the rate of California.

The asthma prevalence in Ventura County is generally lower than the prevalence observed in the State of California. On the contrary, the asthma mortality rate in Ventura County is slightly higher than the rate reported for the State of California. Asthma hospitalization and emergency department visit rates in 2014 were reported to be lower in Ventura County than in California.

The area also has a lower lifetime asthma prevalence compared to rates reported for California, the county overall and in the project vicinity.

Within Ventura County, the Mission Rock zip code (i.e. 93060) has a lower hospitalization rate compared to rates reported for California and the county overall. Its emergency room visit rate due to asthma is slightly higher than Ventura County but lower than California. Its emergency room visit rate due to adult asthma is lower than the ones for both Ventura County and California. Its emergency room visit rate due to pediatric asthma is higher than Ventura County but lower than California.

Review of asthma hospitalization rates in Ventura County by race/ethnicity shows that the hospitalization rate for African-Americans is 2.64 times greater than the rate for Whites and approximately 3.45 times greater than the rate for Hispanics. Similarly, the emergency department visit rate for African-Americans is 3.85 times greater than the rate for Whites and about 3.68 times greater than the rate for Hispanics.

Medicare Population of COPD in Ventura County in 2014 is lower than the rate reported for California.

Valley Fever or Coccidioidomycosis is a potentially serious infection caused by fungi endemic to Ventura County soil. There was no observed tendency of the number of cases to increase over time.

CONCLUSIONS

This assessment has reviewed available information on the status of cancer and respiratory disease in Ventura County, California with particular attention to the area near the proposed site for the Mission Rock Energy Center. Studies reviewed have shown that Ventura County is ranked above average among counties in California for overall health outcomes.

Other than childhood cancer and breast cancer, the incidence rates in Ventura County are lower for lung and bronchus cancer and prostate cancer compared to the rates in the State of California. Cancer mortality rates of all cancer sites are lower in Ventura County than in the State of California.

The asthma mortality rate in Ventura County is higher than the rate reported for the State of California. On the contrary, the asthma prevalence, asthma hospitalization and emergency department visit rates in Ventura County are all generally lower than the rate for California.

Medicare Population of COPD in Ventura County in 2014 is lower than the rate reported for California. Valley Fever rates appear to be stable in Ventura County.

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See footnote 2.

SOCIOECONOMICS

Lisa Worrall

SUMMARY OF CONCLUSIONS

Energy Commission staff (staff) concludes that construction and operation of the Mission Rock Energy Center (Mission Rock or project) would not cause significant adverse direct, indirect, or cumulative socioeconomic impacts. The project would not induce substantial population growth or displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere. Mission Rock also would not negatively impact acceptable service ratios of the project area's law enforcement services, parks and recreation facilities, public libraries, or schools, necessitating the construction of new or physically altered governmental facilities that could result in significant environmental impacts. Staff-proposed Condition of Certification **SOCIO-1** would ensure payment of school impact fees consistent with local practices.

Staff concludes that the project's socioeconomic impacts on the environmental justice (EJ) population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3** would be less than significant and would not be disproportionate.

INTRODUCTION

Staff's socioeconomics impact analysis evaluates the project's induced changes from construction and operation on the following:

- existing population (population influx)
- employment patterns (temporary/permanent job creation and labor supply)
- local communities (housing supply) and resources (parks and recreation and public libraries)
- law enforcement services
- schools
- estimated beneficial economic effects

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

There are no applicable socioeconomics-related LORS that the proposed project must comply with. The Briggs Elementary School District and Santa Paula Unified School district have policies that allow their districts to collect school developer fees on industrial construction, as allowed by the California Government Code Section 65995 and Section 17620 of the Education Code. Refer to the "Schools" subsection for more information.

SETTING

The proposed project is located west of the city of Santa Paula in unincorporated Ventura County at 1025 Mission Rock Road, a property used for recreational vehicle and boat storage. Proposed linear infrastructure includes an electric transmission line, a natural gas pipeline, and a recycled-water pipeline.

PROJECT STUDY AREAS

The following are the study areas for socioeconomic-related project impacts:

- population influx and housing supply-
    - Ventura County, including the cities of Camarillo, San Buenaventura (Ventura) and Santa Paula and the communities of El Rio and Saticoy.
- public services[1], including law enforcement, parks and recreation facilities, public and libraries, -
    - Ventura County
- schools
    - Briggs Elementary School District and Santa Paula Unified School District
- regional workforce, sales tax, and indirect and induced economic project effects (including IMPLAN[2] modeling)-
    - Ventura County
- EJ impacts within a six-mile radius of the project site

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) requires a list of criteria to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (CEQA Guidelines section 15382).

Thresholds serve as the benchmark for determining if a project will result in a significant adverse impact when evaluated against existing conditions (e.g., "baseline" conditions). State CEQA Guidelines, codified in California Code of Regulations section 15064(e), specify:

> "Economic and social changes resulting from the project shall not be treated as significant effects on the environment."

[1] Project impacts on fire protection are analyzed in the **Worker Safety and Fire Protection** section of this staff assessment.
[2] IMPLAN is and input/output model used to estimate the indirect and induced economic benefits of a project based on the direct expenditures.

"Where a physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project. Alternatively, economic and social effects of a physical change may be used to determine that the physical change is a significant effect on the environment. If the physical change causes adverse economic or social effects on people, those adverse effects may be used as a factor in determining whether the physical change is significant."

Staff has used Appendix G of the CEQA Guidelines for this analysis, which specifies that a project could have a significant impact on the environment if it would:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere; or
- Result in the construction of new or physically altered governmental facilities to maintain acceptable levels of service for:
    - law enforcement
    - parks and recreation
    - schools

Staff's determination of whether a project would induce population growth, displace people or housing, and affect the service ratios of law enforcement, parks and recreation, and schools is based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range for construction workers and one-hour commute range for operational workers.

Ventura County Initial Study Assessment Guidelines

The Ventura County Resource Management Agency Planning Division provided Energy Commission staff the *Ventura County Initial Study Assessment Guidelines* (April 26, 2011) for staff to use when analyzing the potential project impacts in accordance with Ventura County's adopted CEQA environmental significance thresholds (VCPD 2016a). In addition to Appendix G CEQA Guidelines, staff has used the *Ventura County Initial Study Assessment Guidelines*, discussed below, in preparing this analysis. The guidelines are shown in italics.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Induce Substantial Population Growth

Staff defines "induce substantial population growth" (for purposes of this analysis) as workers moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region.

Staff defines the local workforce as:

- Residing within a two-hour commute of project construction and a one-hour commute for project operation.
    - Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Area [3] (MSA) (Ventura County)

Workers with a greater commute would be considered non-local and would tend to seek lodging closer to the project site (temporarily during construction or permanently during operations).

Socioeconomics Table 1 shows the historical and projected populations for the cities and communities within proximity of the project site, plus Ventura County. Population projections between 2010 and 2035 show a growth ranging from 18 to 32 percent or 0.7 to 1.3 percent per year in the cities within and around the six-mile radius.

Socioeconomics Table 1
Historical and Projected Populations

Area	2000[1]	2010[2]	2020[3]	2035[3]	Projected Population Change 2010-2035		
					Number	Percent (%)	Percent per Year (%)
Camarillo	57,077	65,201	72,200	76,700	11,499	17.64	0.71
El Rio	6,193	7,198	-	-	-	-	-
Santa Paula	28,598	29,321	35,400	38,800	9,479	32.33	1.29
San Buenaventura (Ventura)	100,916	106,433	116,900	128,800	22,367	21.02	0.84
Saticoy	-	1,029	-	-	-	-	-
Ventura County	753,197	823,318	889,000[3] 876,124[4]	954,000[3] 949,765[4]	130,682*	15.87	0.63
Notes: - Data not available. * Calculated using the highest 2035 population projection. **Sources:** [1]US Census 2000, [2]US Census 2010a, [3]SCAG 2012, [4]CA DOF 2014.							

Socioeconomics Table 2 shows the project labor needs and the total labor supply in the study area, which would be more than adequate to provide the construction labor for the project. Project operations would employ up to 15 full-time workers.

[3] A Metropolitan Statistical Area (MSA) contains a core urban area population of 50,000 or more, consists of one or more counties, and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core.

Socioeconomics Table 2
Total Craft Labor by Skill in the Study Area MSA versus
Project Construction Labor Needs

	Oxnard-Thousand Oaks-Ventura MSA (Ventura County)				Project Labor Needs (Plant and Linears)
	Total Workforce (2012)	Total Projected Workforce (2022)	Growth from 2012		Peak Construction Period (Sept. 2019, Month 11)
			Number	Percent	
Carpenter	1,910	2,340	430	22.51	22 (25)
Cement Finisher	840	1,210	370	44.05	10 (15)
Construction Manager	800	920	120	15	2 (3)
Electrician	1,060	1,320	260	24.53	10
Engineer	5,490	5,810	320	5.83	2
Ironworker	-	-	-	-	10
Laborer[1]	1,820	2,420	600	32.97	38 (56)
Operator[2]	610	800	190	31.15	10 (13)
Paving crew[3]	90	110	20	22.22	0 (4)
Pipefitter	520	650	130	25	10
Project Manager	-	-	-	-	2 (4)
Project Manager Assistant	-	-	-	-	2 (4)
Surveyor	-	-	-	-	2 (5)
Tradesman[4]	9,900	12,980	3,080	31.11	20 (26)
Truck driver[5]	1,160	1,290	130	11.21	6 (10)
Total Construction Staff (Plant and Linears)	24,200	29,850	5,650	23.35	146

Notes: - No data available; ( ) Number in parenthesis represents the peak number of workers in a given month for a specific a trade type for construction. The number outside the parenthesis represents the number of workers by trade type during the peak month of construction; [1] Construction laborer; [2] Operating Engineers and Other Construction Equipment Operators; [3] Paving, Surfacing, and Tamping Equipment Operators; [4] Construction Trades Workers; [5] Industrial Truck and Tractor Operators. **Sources:** CH2M 2016g, Table DR65-1, pgs. 8-9; and CA EDD 2015.

The applicant expects project construction to last 23 months, from November 2018 until September 2020, with commercial operation beginning in September 2020 (CAL 2015a, pg. ES-3). The project's construction workforce would average 93 workers over the 23-month period and reach a peak of 146 workers in month 11 (September 2019) (CH2M 2016g, pgs. 8-9). The workforce needed during the project's peak construction workforce month is presented in **Socioeconomics Table 2**. When the project's workforce demand reaches a peak for a particular trade outside of the total workforce construction peak, the greatest number of workers for that trade is reported in the above table in parenthesis.

The applicant assumes that approximately 80 percent of the construction workforce would be drawn from Ventura County and thus would be considered local workforce, commuting daily to the project site (CAL 2016b, pg. 33). The remaining 20 percent of the construction workforce would be considered non-local and likely seek lodging closer to the project site, returning to their primary residences on weekends. Therefore, during construction, there would be an average of approximately 74 local and 19 non-local workers. During peak construction there would be approximately 117 local and 29 non-local workers.

Mission Rock would employ up to 15 full time employees for project operations. Mission Rock would have an operations and maintenance (O&M) manager, business supervisor, and instrument technician working during the standard 5-day, 8-hours per day work week. Additionally, the facility would be manned by an operator on a 24-hour basis, using rotating 12-hour shifts. The applicant assumes all of the workforce would be local, commuting within Ventura County (CAL 2015a, pg. 5.10-15 and 5.10-16). **Socioeconomics Table 3** presents the operations workforce needed for Mission Rock.

Socioeconomics Table 3
Total Craft Labor by Skill in the Study Area MSA versus Project Operations Labor Needs

	Oxnard-Thousand Oaks-Ventura MSA (Ventura County)				Operations Staff
	Total Workforce (2012)	Total Projected Workforce (2022)	Growth from 2012		
			Number	Percent	
Operations Supervisor [1]	1,270	1,350	80	6.3	1
Plant Engineer [2]	650	640	-10	-1.5	1
Power Plant Technicians [3]	600	630	30	5.0	5
Controls Specialty Power Plant Technicians*	-	-	-	-	1
Chemistry Technician	70	90	20	28.6	1
Mechanical Specialty Power Plant Technicians*	-	-	-	-	1
Electrical Specialty Power Plant Technician*	-	-	-	-	1
Maintenance Supervisor*	-	-	-	-	1
Maintenance Planner*	-	-	-	-	1
Plant Manager*	-	-	-	-	1
Power Plant Assistant*	-	-	-	-	1
Total Operations Staff	2,590	2,710	120	4.6	15

Notes: - No data available; ( ) Number in parenthesis represents the peak workforce by trade type during construction; [1] First-Line Supervisors of Production and Operating Workers, [2] Electrical Engineers, [3] Plant and System Operators; * 7 of the 10 operations staff identified by the applicant cannot be matched to a specific trade type. **Sources:** CAL2015a Table 5.10-11, pg. 5.10-16; and CA EDD 2015.

Energy Commission staff recently contacted the local building and construction trades council when reviewing the Puente Power Project (15-AFC-01), proposed in the city of Oxnard. Staff sought information about the local high skilled construction workforce in Ventura County. The information Tony Skinner with the Tri-Counties Building and Construction Trades Council (Ventura, Santa Barbara, San Luis Obispo counties) (BCTC) provided for the Puente Power Project would be applicable to Mission Rock as the workforce for Mission Rock would also come from Ventura County. When asked about labor supply, Mr. Skinner explained that there would not be a problem with labor supply. Mr. Skinner added that the latest economic forecast by the Economic Development Collaborative of Ventura County reported July 2015 as one of the worst months since the recession in the construction sector for Ventura County (CEC 2016d). According to BCTC staff consulted for other similar projects to Mission Rock, there is a certain ratio of apprentices to journeyman members required for staffing a job site. With robust apprentice programs, most of which last five years, there are apprentices at all levels available for staffing for Mission Rock.

The applicant assumes that all of the 15 operations staff needed for Mission Rock would be local and commute from Ventura County, therefore no new residents would be added and Mission Rock would not create a substantial population influx.

Staff concludes the project's construction and operations workforce would not directly or indirectly induce substantial population growth in the project area, and therefore, the project would create a less than significant impact under this criterion.

Housing Supply

Ventura County Initial Study Assessment Guidelines

Demand for New Housing-

Construction Workers- Any project that involves construction has an impact on the demand for additional housing due to potential housing demand created by construction workers.

Full-time Equivalent Employees- Pursuant to General Plan Policy 3.4.2-9, projects that would result in new jobs in the County have an impact on the demand for housing. However, only projects that result in 30 or more new full-time-equivalent (FTE) lower-income employees would have a significant project-specific and cumulative impact on the demand for housing because the General Plan shows that there is potentially insufficient inventory of land to develop lower-income housing. Conversely, projects that result in fewer than 30 new, FTE employees or projects that would result in 30 or more moderate or upper income FTE employees do not have a significant project-specific or cumulative impact on the demand for housing.

Socioeconomics Table 4 presents housing supply data for the project area. Year 2016 housing estimates indicated 13,974 vacant housing units within Ventura County representing a vacancy rate of 4.8 percent (CA DOF 2016). A five percent vacancy is a largely industry-accepted minimum benchmark for a sufficient amount of housing available for occupancy (Virginia Tech 2006). The housing counts in the project area indicate a sufficient supply of available housing units within a six-mile radius of the project site.

Socioeconomics Table 4
Housing Supply Estimates in the Project Area

Housing Supply		2016	
		Total	Vacant
Santa Paula	Number	8,998	377
	Percent	100	4.2
Camarillo	Number	26,461	565
	Percent	100	2.1
San Buenaventura	Number	43,826	3,001
	Percent	100	6.8
Unincorporated Ventura County	Number	35,028	2,837
	Percent	100	8.1
Ventura County	Number	287,080	13,794
	Percent	100	4.8
Sources: CA DOF 2016.			

Ventura County has a forecasted 1,651,990 rooms with an occupancy rate of 76.5 percent for 2017 (CBRE 2017). There are over 650 recreational vehicle (RV) and campground spaces spread throughout 11 RV/campground parks within the study area. (RV Parking 2014). The majority of the RV/campground parks have restrictions limiting stays to 14 consecutive days. There are a few RV/campground parks that allow extended stay.

During construction, there would be approximately 29 non-local workers during peak construction and an average of 19 non-local workers. Non-local workers are likely to seek lodging closer to the project site. With many lodging options to choose from, staff expects no new housing would be required as a result of the project.

Mission Rock would employ 15 operations workers that would likely come from Ventura County, commuting from their current residence. As a result, there would be few, if any new population moving into the project area and thus negligible impacts to the housing supply. Also, as the project would employ fewer than 30 new, full-time equivalent employees, the project would not have a project-specific or cumulative impact on the demand for housing based on Ventura County Initial Study Assessment Guidelines.

Staff concludes the project's construction and operations workforce would not have a significant adverse impact on the housing supply in the project area including Ventura County and therefore, the project would create a less than significant impact under this criterion.

Displace Substantial Numbers of Existing Housing and People

Ventura County Initial Study Assessment Guidelines

Existing Housing Stock-

Any project that would eliminate existing dwelling units would have an impact. The significance of the impact depends on the number of dwelling units eliminated and the affordability of those units. However, construction worker demand is a less than significant project-specific and cumulative impact because construction work is short-

term and there is a sufficient pool of construction workers within Ventura County and the Los Angeles metropolitan regions.

Mission Rock is proposed on the site of existing recreational vehicle and boat storage. The project would not directly displace existing housing or people. The project would not induce substantial population growth or create the need for replacement housing to be constructed elsewhere, as previously discussed.

Staff concludes the project would have no impact on area housing as the project would not displace any people or housing or necessitate the construction of replacement housing elsewhere.

Result in Significant Environmental Effects Associated with New or Physically Altered Government Facilities

As discussed under the subject headings below, Mission Rock would not negatively impact service ratios, response times, or other performance objectives relating to law enforcement, parks and recreation facilities, public libraries, or schools.

Law Enforcement

Ventura County Initial Study Assessment Guidelines

Certain categories of projects have the potential to increase demand for law enforcement or emergency services. These include:

- *agricultural uses*
- *automobile impound yards*
- *bars, taverns and nightclubs*
- *bus and train terminals*
- *cemeteries*
- *conference centers/convention centers*
- *educational Institutions*
- *health services, including clinics*
- *hotels, motels*
- *libraries*
- *ministorage*
- *projects with walls or fences susceptible to graffiti*
- *retail trade*
- *temporary events*
- *amusement, recreation, and sport facilities*
- *banks and financial institutions*
- *boarding houses and bed-and-breakfast inns*
- *care facilities*
- *clubhouses*
- *dwellings*
- *government buildings*
- *hospitals*
- *laboratories, research and scientific*
- *manufacturing*
- *parking facilities*
- *rental and leasing of durable goods*
- *salvage yards*

Other categories of projects would not have project-specific or cumulative impacts on law enforcement or emergency services but should identify specific measures that would be included as part of the proposed project to address theft, vandalism, disturbances and/or substance abuse. Projects that include adequate security measures would have a less than significant project-specific and cumulative impact on law enforcement and emergency services.

Security measures to address potential increases in theft, vandalism, disturbances, and/or substance abuse that could affect public safety in the surrounding area include:

- *alarms*
- *fencing*
- *other design measures to create defensible space*
- *removal of graffiti within a specified time period*
- *window and door locks*
- *cameras*
- *nighttime security lighting*
- *private security patrols or special event security assistance*
- *treatment of vulnerable surfaces with anti-graffiti coating or landscaping*

Mission Rock would not fall into the specific categories of projects identified as having the potential to increase law enforcement or emergency services listed above. Additionally, the Mission Rock Application for Certification identified specific security measures that would be included as part of the project. For example, the project site would be surrounded by an 8-foot chain-link security fence topped with barbed wire (CAL 2015a, pg. 5.13-9). A security plan would be prepared including further descriptions of the site fencing and security gates, evacuation procedures, and a protocol for contacting law enforcement in the event of conduct endangering the facility, its employees, its contractors, or the public. The security plan would include a fire alarm monitoring system, measures to conduct site personnel background checks (including employee and routine onsite contractors) consistent with state and federal law regarding security and privacy. The security plan would also include site access protocol for vendors including hazardous materials vendors, and a protocol for hazardous materials vendors to prepare and implement security plans and to ensure that all hazardous materials drivers are in compliance with personnel background security check. The plan would also include a demonstration that the perimeter security measures will be adequate. The demonstration may include one or more of the following: security guards, security alarms, perimeter breach detectors and onsite motion detectors, and video or still camera monitoring system (CAL 2015a, pg. 5.5-14). Based on the Ventura County Initial Study Assessment Guidelines above, Mission Rock would not have a project-specific or cumulative impact.

Furthermore, Hazardous Materials Management staff is proposing Conditions of Certification **HAZ-7** and **HAZ-8**, requiring the preparation of a construction site security plan and operation security plan. Additional requirements of these plans beyond those proposed by the applicant include private security during the construction phase and installation of internet protocol (IP) addressed security cameras allowing law enforcement to monitor when calls for service are received in the area.

According to Hazardous Materials Management staff, the site security plans required by Conditions of Certification **HAZ-7** and **HAZ-8** are to be designed in compliance with North American Electric Reliability Council (NERC) guidelines. NERC guidelines are sanctioned by all utilities and the federal government and are the guidelines the Energy Commission uses. For more discussion about NERC or site security, refer to the **Hazardous Materials Management** section of this staff assessment. With the two recommended Hazardous Materials Management conditions of certification and the required project design compliance with NERC guidelines, staff concludes project site security would be consistent with current power plant security standards.

The proposed Mission Rock site is located within the jurisdiction of the Ventura County Sheriff's Department (VCSD), Santa Clara Valley station in the city of Fillmore, approximately 14 miles east of the project site. Energy Commission staff contacted VCSD to discuss the proposed project, ascertain their ability to provide law enforcement services to the project, and solicit comments or concerns they might have about the project. Staff included an example of two conditions of certification typically applied to projects like Mission Rock to address construction and operations site security and traffic management. Responses were provided by Commander Chris Dunn and Captain Dave Wareham. The estimated response time for priority calls (emergency) is 17 minutes and the estimated response time for non-priority calls (non-emergency) is 30 minutes (CEC 2016j). Existing staffing levels equate to one sworn peace officer covering an approximately 200-square-mile area in which the facility is proposed. Commander Dunn noted that the Santa Clara Valley station is not overextended for this project, so the sheriff facilities fee listed in the Ventura County Municipal Code (§ 3212) is not applicable.

To follow up to Captain Wareham's responses to the law enforcement needs assessment form (sent to VCSD as previously referenced), Energy Commission staff spoke with Sergeant Kevin Vaden in the Santa Clara Valley station. Sergeant Vaden had communicated concerns to Hazardous Materials Management staff and echoed them to Socioeconomics staff about potential crime and demonstrations associated with the power plant, particularly with the proximity of the Todd Road Jail and the possible effects that might be posed to the jail. See the **Hazardous Materials Management** section of this staff assessment for a discussion of Sergeant Vaden's concerns and how they have been addressed.

Based on the feedback from VCSD, as discussed above, and with the inclusion of the two Hazardous Materials Management conditions of certification, staff concludes the project would not impact local law enforcement performance objectives or necessitate alterations to the sheriff station or the construction of a new sheriff station to maintain acceptable performance objectives for law enforcement services; therefore, no associated physical impact on the environment would result. Staff concludes that for the above reasons, the project would have a less than significant impact under this criterion.

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. CHP services include law enforcement, traffic control, accident investigation and the management of hazardous material spill incidents. The nearest CHP office is located in the city of Ventura (San Buenaventura) (CHP 2016). The

Hazardous Materials Management section of this staff assessment discusses response times for hazardous material incidents.

Parks and Recreation Facilities

Ventura County Initial Study Assessment Guidelines

A project will have a significant impact on recreation if it would cause an increase in the demand for recreation, parks, and/or trails and corridors or would cause a decrease in recreation, parks, and/or trails or corridors when measured against the following standards. Such standards are multi-jurisdictional in terms of supply and are to be used as a method of measuring whether an impact will be significant to the point of requiring an Environmental Impact Report.

- *Local Parks/Facilities - 5 acres of developable land (less than 15% slope) per 1000 population.*
- *Regional Parks/Facilities - 5 acres of developable land per 1000 population.*
- *Regional Trails/Corridors - 2.5 miles per 1000 population.*

A project will also have a significant impact on recreation if it would impede future development of Recreation Parks/Facilities and/or Regional Trails/Corridors.

Ventura County provides regional recreation facilities countywide and local facilities in unincorporated areas (Ventura Co 2007). Recreation facilities are provided by many agencies; cities and recreational park districts provide local parks, federal, state, and quasi-public agencies provide regional recreation facilities. The Mission Rock site is within an unincorporated area but not in a regional park district.

There are approximately 22.03 acres of local parks/facilities, 4,639 acres of regional parks/facilities, and 22.6 miles of regional trails/corridors in Ventura County (CEC 2016f).

Department of Finance population estimates for 2016 in the unincorporated area in Ventura County show a population of 98,232 (DOF 2016). Based on this current estimate, approximately 491.16 acres of local parks/facilities, 491.16 acres of regional parks/facilities, and 245.58 miles of regional trails/corridors would be needed to meet the parks and recreation facilities standards.

Ventura County does not meet their standard for local parks/facilities or regional trails/corridors but does meet their standard for regional parks/facilities.

Staff's analysis shows there would not be a large number of workers moving into the project area during project construction and no workers moving to the project area for project operations. Non-local construction workers tend not to visit parks and recreation facilities or bring their families with them when working on a job. Also, there are no park or recreation facilities in close proximity to the project. Therefore, there would be no increase in the usage of or demand for parks or other recreational facilities.

Staff concludes the project would not cause significant environmental effects associated with the provision of new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objections with respect to parks. The project would not increase the use of neighborhood or regional parks or recreational facilities to the extent that substantial physical deterioration of the facility would occur, or be accelerated. The project would not necessitate the construction of new parks in the area, nor does the project propose any park facilities. For the above reasons, staff concludes the project would have no impact under this criterion.

Public Libraries

Ventura County Initial Study Assessment Guidelines

The term "public libraries" includes public library facilities and services. This issue entails the direct impact to, and demand for, public library facilities and services.

Threshold of Significance-
A project has a significant project-specific impact on public library facilities and services if it would substantially interfere with the operations of an existing public library facility, put additional demands on a public library facility which is currently deemed overcrowded, or limit the ability of individuals to access public library facilities by private vehicle or alternative transportation modes. A project has a cumulative impact on public library facilities and services if the project, in combination with other approved projects in its vicinity, would cause a public library facility to become overcrowded.

Methodology-
Non-residential projects would not, in general, have an impact on the demand for public libraries. However, non-residential projects located adjacent to public library facilities should be referred to the Director of Library Services Agency, County of Ventura for review and comment before completing the Initial Study.

Due to the nature of the project and proximity of the closest public library to the project site and project linear (as described below), the project is not likely to limit the ability of individuals to access public library facilities by private vehicle or alternative transportation modes. In particular the project impacts to traffic and transportation would not be the type to limit access along the project area roadways or affect alternative transportation modes. For more information about the project's impacts to traffic and transportation, see the **Traffic and Transportation** section of this staff assessment.

The closest public library to the Mission Rock site is the Saticoy Library, approximately 2.6 miles from the Mission Rock site. The Saticoy Library is the closest library to a project linear component. The Saticoy Library is approximately 0.7 miles from both Route A and Route B of the natural gas pipeline. The power plant or natural gas pipeline would not interfere with the operation of these libraries because the project's impacts that would extend beyond the project site or beyond the natural gas pipeline (Air Quality, Noise and Vibration, Public Health, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Waste Management, and Worker Safety and Fire Protection) were determined to be less than significant with conditions of certification.

The project would not have an impact on the demand for public libraries as non-local construction workers do not tend to visit libraries when working on a job and do not bring their families with them. Operations workers would likely be employed from within Ventura County and may already use the library system. The project would not increase the demand for public libraries.

For the above discussed reasons, the project would have a less than significant impact on public libraries.

Schools

Ventura County Initial Study Assessment Guidelines

The term "schools" includes public elementary, secondary and college level educational facilities. This issue entails the direct impact to, and demand for, school facilities. The requisite school fees would be collected prior to issuance of Building Permits and would ensure that potential impacts remain less than significant.

Threshold of Significance-
A project will normally have a significant impact on school facilities if it would substantially interfere with the operations of an existing school facility.

Methodology-
Projects located adjacent to school facilities will be referred to the appropriate public school district for review and comment regarding the project's impact on the school facilities/operations before completing the Initial Study. Any potential impact on school facilities (public or private) that is not related to demand will be discussed and analyzed under the appropriate subject area of the initial study checklist. For example, if a potential noise or traffic safety issue related to a nearby school facility is identified, that discussion will be included in the respective noise or traffic safety section of the checklist.

Non-residential projects would not have an impact on the demand for schools.

The closest school to Mission Rock site is the Briggs Elementary School at approximately 1.2 miles from the Mission Rock site. The closest linear component to a school is both Route A and Route B of the natural gas pipeline. The natural gas line is approximately 1.3 miles from the Briggs Elementary School and the Sacred Heart Elementary School. The project or linear would not interfere with the operation of these schools because the project's impacts that would extend beyond the project site or beyond the natural gas pipeline (Air Quality, Noise and Vibration, Public Health, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Waste Management, and Worker Safety and Fire Protection) were determined to be less than significant with conditions of certification.

As a non-residential project, based on the Ventura County Initial Study Assessment *Guidelines*, the project would not have an impact on the demand for schools.

The California Government Code sets forth the exclusive methods of considering and mitigating impacts on school facilities. Section 65995 expressly provides that "[t]he payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995 … are hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving but not limited to, the planning, use, or development of real property, or any change in governmental organization… on the provision of adequate school facilities."

In the 2011 California Court of Appeal 5th District decision in *Chawanakee Unified School District v. County of Madera, et.al.*, the court held that in addition to prohibiting mitigation of impacts on school facilities beyond statutory school fees, the provisions of SB 50 excuses the consideration and mitigation of a project's direct impacts on school facilities, including a school district's ability to accommodate enrollment. However, the court held that indirect impacts of the project "on parts of the physical environment that are not school facilities are not excused from being considered and mitigated." For example, a project's indirect impacts on traffic, air quality, and noise levels related to school attendance or construction of school facilities must be considered and mitigated in an agency's CEQA document (DWK 2011, KTMJ 2011, and RMM 2011).

The project is in the Briggs Elementary School District (Briggs ESD) and Santa Paula Unified School District (Santa Paula USD). Briggs Elementary School District Board Policy BP 7211 Facilities: Developer Fees allows the Board of Trustees to establish, levy and collect developer fees on residential, commercial and industrial construction within the district. The current school impact fee for the Briggs ESD is $0.37 per square foot of covered, enclosed commercial/industrial space and the current school impact fee for the Santa Paula USD is $0.19 (CEC 2017n). Based on the preliminary project design, approximately 4,480 square feet of occupied structures (control building and garage/warehouse building) would be constructed.

Approximately $1,658 in school fees would be assessed for Briggs ESD and $851 for Santa Paula USD for a combined total of $2,509. Staff is proposing Condition of Certification **SOCIO-1** to ensure the payment of school impact fees to these school districts and that fees are assessed consistent with local practices.

Mission Rock would have a temporary population influx from the non-local portion of construction workers that would seek lodging closer to the project site. Staff's communication with building construction and trade union councils has shown that construction workers do not bring their families with them when working on a job and the workers tend to return to their residences over the weekends. New operations workers, if coming from outside Ventura County, would bring their families with them, resulting in the possible addition of new students in the school districts where the project is located. However, as the applicant anticipates all operations workers would be employed from Ventura County; there would be no additional students. Also, as previously discussed under the "Induce Substantial Population Influx" subsection, Ventura County has a large supply of workers to meet the needs for Mission Rock.

For the above stated reasons, the Mission Rock project would not result in new students being added to the project area school districts and thus would not create the need for additional school facilities to be constructed. Therefore, without project induced changes to school attendance or school facilities, there would be no indirect environmental impacts associated with such changes. The project would have no impact under this criterion.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probably future projects [Cal. Code Regs., tit. 14, § 15065(a)(3)].

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally, or when 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, parks and recreation, and law enforcement services.

Staff reviewed the Mission Rock Master Cumulative Project List for projects that would employ a similar workforce to Mission Rock and have overlapping construction schedules and projects that could supply housing for Mission Rock non-local construction workers and the few, if any, operational workers that may move closer to the project site. In assessing Mission Rock's direct impacts, staff assumed about 20 percent of the Mission Rock construction workforce would be non-local and seek temporary lodging closer to the project site. In assessing cumulative impacts staff estimated the workforce for the cumulative projects would include about 20 percent non-local workers.

The applicant anticipates that if Mission Rock is approved, the project's 23-month construction period would begin in November 2018. Staff considers the following projects in **Socioeconomics Table 5** part of the cumulative setting for socioeconomic resources.

Socioeconomics Table 5
Cumulative Projects

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
9	14-DR-10	6 multi-family units	327 Acacia Rd, Santa Paula	Under Construction
11	Darling Apartments, PROJ-7166	Mixed Use, 43 apts., 2 live/work units and 2,100 sq. ft. commercial/retail.	11166 Darling Rd, Ventura	Under Construction
13	Citrus Dr/Citrus II, PROJ-8427	78-unit, 3-story apt. building.	11156-1172 Citrus Dr, Ventura	In planning process
14	Crosstown Water Pipeline Project, 10-CI-03	8,065 linear ft. of buried water pipeline to connect discharge pipeline from Steckel Water Conditioning Facility at the Steckel Dr/Santa Barbara St intersection to Pleasant St/10th St intersection. Includes 3 small potable water and storm water pipelines.	Citywide, Santa Paula	In design stage, construction projected for Spring 2018
15	Gisler Ranch Mixed Use, PROJ-8428	3-story mixed use development- 43 apts. and 1,200 sq. ft. retail.	11101 Carlos St, Ventura	In planning process
17	Parklands Apartments, PROJ-4222	173 apts. 3 stories with a community building.	SW corner of Wells and Telegraph Rd, Ventura	Under Construction
18	Northbank, PROJ-6270	117 single family homes, 31 affordable triplex/quadplex, 50 apts.	Eastern terminus of North Bank Dr. Ventura	In planning process
19	Habitat for Humanity, 13-CDP-02	Eight, 4-bedroom single family residences.	Trinity Ln and Santa Paula St, Santa Paula	Under Construction
20	Westwood/Parklands, PROJ-03829	216 detached homes, 110 attached homes.	Southwest corner of Wells Rd and Telegraph Rd, Ventura	Under Construction
22	Enclave at Northbank, PROJ-4184	84 residential lots, density bonus concessions for 98 residential units consisting of 84 single-family units and 14 multi-family (7 duplexes).	Southeast corner of Saticoy Ave	Under Construction

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
			and Northbank Dr, Ventura	
23	The Farm (Residential), PROJ-8446	131 single family homes, 34 townhomes, 2 parks and 3 mini parks.	Southeast corner of Telegraph Rd and S Saticoy Ave, Ventura	Approved
25	Strickland Mutual Water Company-PL16-0017	Conditional Use Permit for addition of water supply, transmission and storage facilities for use with existing water supply, storage, and distribution system for a period of 40 yrs. or to 2056.	4952 Joan Way, Oxnard	Approved
26	15-CDP-07	Multi-family dwellings, 11 units.	112 S 12th St, Santa Paula	Proposed
27	Santa Barbara County Reliability Project	Reconstruct existing 66 kV subtransmission facilities within existing and new utility rights-of-way between the Santa Clara Substation in Ventura County and the Carpinteria Substation located in Santa Barbara County.	City of Ventura, Ventura County to City of Carpenteria, Santa Barbara County	Approved. Coastal Development Permit required from Santa Barbara County. Estimated 2 year construction.
29	Voelker Property, PROJ-8150	Residential Project- 18 single family homes. APN 088-281-040	8324 Telegraph Rd, Ventura	In planning process
30	14-CDP-02	44 single family homes	1226 Ojai Santa Paula Rd, Santa Paula	Proposed
31	Williams Homes / River Rock Project (City Project No. 2014-CDP-02)	40 new homes and the retention/rehabilitation of the Hardison House main residence and barn/stables. Project requires demo of existing structures (excluding Hardison House, barn/ stables) which are a historic resource. 9.18-acres to remain open space.	1226 Ojai Road, Santa Paula	Approved
33	Limonera Company - East Area 1 Specific Plan Amendment	501-acre site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2-acres of civic uses for school facilities, and 225.3-acres open space and park uses.	Telegraph Rd. and Padre Ln (east of Santa Paula Creek), Santa Paula	Construction would occur continuously during 10-year period. Development of four phases based on market conditions. In design stage (specific

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
				maps). Designing Phase 1. Preliminary for multi-family units submitted in March/April 2017. Hallock Center Area portion of site (SE) developed portion. Tree removal, grading. Construction start date unknown.
34	04-TM-01	19 lot residential subdivision.	Cliff Dr and Forrest Dr, Santa Paula	Plan Check
36	Garden Acres Mutual Water Company Minor Modification and Conditional Certificate of Compliance to CUP (Case No. LU06-0019)	Continued use of existing water supply, storage and distribution system for a period of 40 yrs.; installation of water transmission and storage facilities; and approval of a Conditional Certificate of Compliance to create legal lot for Tax Assessor's Parcel 149-0-041-185.	Friedrich Road between Nyeland Ave and Orange Dr, Oxnard	Approved
38	PL16-0085	Relocation antenna within the Conditional Use Permit (SES Americom satellite) control facility. Installation of 9 utility poles (40 ft.) and electrical lines within county right-of-way along the southern and eastern property boundary. Lines to connect with Southern California Edison (SCE) utility lines that serve the Federal Aviation Administration and future transmission bandwidth needs. One 200 sq. ft. storage shelter.	5990 Solano Verde Rd, Somis	Approved
39	North Pleasant Valley (NPV) Treatment Facility	Construction and operation of groundwater treatment facility, including drilling and production of two new wells, installation of pipelines for distribution of raw well water, product water and brine. Facility to provide treated water to Camarillo's existing service area, with average design capacity of 7,500 acre ft. per yr. of production water.	Las Posas Rd and Lewis Rd, Camarillo	Phase 1- design phase 2016/2017 and approval for ground water extraction of 4,500 acre feet per year Project approved by city of Camarillo. Phase 2 expected early 2018

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
				with drilling of wells
40	La Barranca Residential Project, PROJ-6098	Construction of 9 single-family residences with 3 floor plan types (3,053-3,589 sq. ft. with 64 parking spaces).	5533 Foothill Road, Ventura	Under Construction
41	Island View Communities, PROJ-2008	154 apartments, 4 stories, 3.8-acres.	1776 Alameda Ave, Ventura	Under Construction
42	Calleguas Municipal Water District (CMWD) Salinity Management Pipeline	Phase 1- pipeline from Camrosa Water Reclamation Facility in southwestern Ventura County to ocean outfall at Port Hueneme. Phase 2 (Lower Reach) of the CRSMP- approximately 6.6 miles of pipeline.	SR 34 (Somis Road) and 118 (Los Angeles Ave), County Wide	Phases 2D and 2E (i.e., Upper Reach) are in design.
45	Puente Power Project	Project sited on approximately 3 acres of the north portion of existing 36-acre Mandalay Generating Station (MGS). Replaces 2 gas-fired steam-generating units at MGS with a new General Electric Frame 7HA.01 single-fuel combustion turbine generator and associated auxiliaries. Developed on previously disturbed vacant brownfield land.	393 North Harbor Blvd, Oxnard	Proposed (Final Staff Assessment published Dec. 2016). Estimated construction start October 2018. With decommissioning and demolition of MGS units 1 & 2 brings total duration 39 months.
46	State Route 126 Safety Route Enhancement Project	Two design options. Design Option 1: Concrete Median Barrier Design, Option 2: Raised Median Island with Visual Markers. Common Features of Both Design Options: 1. Construct roundabouts; 2. Widen road curves; 3. Acceleration/deceleration lane at railroad crossings; 4. Construct retaining walls. Improve existing highway access including driveways at various locations. Project length approximately 7 miles.	State Route 126 and E street, Fillmore	Proposed (Draft Environmental Impact Report to be released late summer/fall 2017)
50	PL15-0139 Stion Solar Facility	Requests a conditional use permit to authorize installation and operation of a 3.0 megawatt (MW) alternating current 4.3 MW direct current photovoltaic utility-scale solar renewable energy production facility on approximately 25 acres. Installation of solar panel arrays on ground mounted racks covering a majority of site while maintaining	67 East Telegraph Road, Fillmore	Approved

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
		on-site circulation. Water provided by existing water well with emergency reservoir tank of 5,000 gallons for firefighting purposes. Other than ancillary storage structures, no habitable buildings proposed. No additional grading or drainage improvements. No native vegetation disturbed by project.		
51	AD12-0071	24-unit multi-family development (APN 056-0-113-050) within Piru Area Plan land use designation. Three residential buildings of 5,253 sq. ft. each housing eight rental units. A 1,390 sq. ft. community building is proposed. Access to site provided by 24-ft wide private driveway via Center Street with 24 ft wide secondary access driveway via Market Street to south. 45 parking spaces would be provided on-site. No native vegetation removed, though five heritage sized pepper trees would be removed. Water provided by Warring Water Service Inc. and waste water disposal provided by Ventura County Sanitary District No. 16.	4072 E Center St., Piru	In Review

The socioeconomic impacts of Mission Rock are primarily driven by the construction workforce needs of the project. Mission Rock would employ an average of 93 workers per month during construction and would peak during month 11 (September 2019) with 146 workers onsite. The majority of the construction workforce is expected to be local workers commuting daily to the project site. Any potential project impacts from the 20 percent of non-local workforce during construction (average 19, peak 29) would be the result of these workers temporarily relocating closer to the project site. Temporary lodging would be sought by these non-local workers. Once operational, Mission Rock would permanently employ 15 workers, drawn locally within Ventura County.

The cumulative projects are at different stages of approval and construction, so the labor needed to construct them and any associated housing needed for non-local workers would be spread out over time, instead of occurring all at one time. Also as discussed previously, staff estimates that as with Mission Rock construction, approximately 20 percent of the workforce needed for the cumulative projects would be non-local and seek lodging closer to the project sites. **Socioeconomics Table 6** presents the total labor force within Oxnard-Thousand Oaks-Ventura MSA.

Socioeconomics Table 6
Table Labor Supply for the Local Study Area

Total Labor (Construction Workforce)*	Total Workforce for 2012	Total Projected Workforce for 2022	Growth from 2012	Percent Growth from 2012 (%)
Oxnard-Thousand Oaks-Ventura MSA	24,200	29,850	5,650	23.35

Notes**:** Total workforce includes only the crafts specifically needed for Mission Rock. *See **Socioeconomics Table 2** for list of crafts included in the total construction workforce figures. **Source:** CA EDD 2015.

Even if several of the cumulative projects were to have overlapping construction schedules with their peak construction activity occurring at the same time, this workforce is more than sufficient to accommodate the labor needs for these projects identified in **Socioeconomics Table 5**, including Mission Rock. There are also ample operational workers to supply Mission Rock.

As shown in **Socioeconomics Table 5**, there are approximately 390 apartments in the cities of Santa Paula and Ventura currently under construction. This added housing would supplement the many lodging options already available in Ventura County – the 1,651,990 rooms forecasted for 2017 with an occupancy rate of 76.5 percent and over 650 recreational vehicle (RV) and campground spaces spread throughout 11 RV/campground parks within the study area. The incremental increased need for workers for Mission Rock, including the non-local workers, would not significantly impact the housing supply. The incremental increase in demand for housing would be less than significant and Mission Rock would not contribute to a cumulative impact on the housing supply. The 15 operational workers would likely be hired within Ventura County and few, if any, would relocate closer to the project site; therefore, the project would not have an incremental impact due to a permanent influx of workers.

Energy Commission staff's communication with the Ventura County Sheriff's Department confirmed the station is not overextended for this project. Any security concerns would be addressed with Hazardous Materials Management conditions of certification **HAZ-7** and **HAZ-8**. As discussed previously, the project would not result in law enforcement performance objectives being affected and would not increase the demand for law enforcement services. Thus, the project would not have an incremental impact on law enforcement services. Even if the cumulative projects listed in **Socioeconomics Table 5** create a significant demand on law enforcement services, Mission Rock would not have an incremental contribution to a cumulative impact.

Non-local construction workers who seek lodging closer to the project do not bring their families with them and generally return to their residences over the weekend. Construction workers are not likely to spend time at neighborhood parks and recreational facilities, thus the project would not affect neighborhood or regional parks or other recreational facilities. The applicant would likely employ operations workers from Ventura County and with the large supply of workers in Ventura County, as discussed previously in the "Induce Substantial Population Influx" subsection, no operations workers would move into Ventura County. As the operational workers would already be residents in the county and already would make use of the park and recreational resources. Therefore, Mission Rock would not have an incremental impact on neighborhood or regional parks or other facilities.

The power plant or natural gas pipeline would not interfere with the operation of the closest library to the project or linear because the project's impacts that would extend beyond the project site or beyond the natural gas pipeline (Air Quality, Noise and Vibration, Public Health, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Waste Management, and Worker Safety and Fire Protection) were determined to be less than significant with conditions of certification. The project would also not limit the ability of individuals to access public library facilities by private vehicle or alternative transportation modes as the project impacts to traffic and transportation would not be the type to limit access along the project area roadways or affect alternative transportation modes.

The project would not have an impact on the demand for public libraries as non-local construction workers do not tend to visit libraries when working on a job and the project operations workers would likely be employed from within Ventura County and may already use the library system. Therefore, Mission Rock would not have an incremental impact on the demand for public libraries.

The project or natural gas pipeline would not interfere with the operation of the closest schools to the project or linear because the project's impacts that would extend beyond the project site or beyond the natural gas pipeline (Air Quality, Noise and Vibration, Public Health, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Waste Management, and Worker Safety and Fire Protection) were determined to be less than significant with conditions of certification.

Without additional operations workers moving into Ventura County, there would also be no additional students added to the local school districts. As no change in school enrollment or the need for additional school facilities would result from the project, there would be no indirect impacts to the environment from such changes. As Mission Rock would not impact schools, the project would not have an incremental impact on schools.

For the reasons discussed above, staff does not expect the construction or operation of Mission Rock to make a cumulatively considerable contribution to any significant cumulative impacts related to population influx, housing supply, law enforcement, parks and recreation facilities, public libraries, or schools.

COMPLIANCE WITH LORS

There are no applicable socioeconomics-related LORS that the proposed project must comply with.

ENVIRONMENTAL JUSTICE

Environmental Justice Figure 1 shows the presence of an environmental justice (EJ) population based on a minority population within a six-mile radius of the project site. **Environmental Justice Figure 2** and **Table 3** show that the below-poverty-level population in Santa Paula County Census Division and population receiving free or reduced price meals in the Rio Elementary School District and Somis Union School District constitute an EJ population based on a low income population. Because the study area used in this analysis for impacts related to population influx, housing supply, law enforcement, parks and recreation facilities, public libraries, and schools includes Camarillo, San Buenaventura (Ventura) and Santa Paula and the communities of El Rio and Saticoy, staff considered Mission Rock's socioeconomic impacts on the EJ population living in these geographic areas.

The project is proposed in an industrial area adjacent to agricultural land uses. Staff used the US Census Bureau's OnTheMap tool to estimate the number of agricultural jobs/farm workers within a six mile and one mile radius of the Mission Rock site (US Census 2014). Staff found there are approximately 51 agricultural jobs/farm workers within a one mile radius of the project site concentrated north of the project site. There are approximately 4,398 agricultural jobs/farm workers within a six mile radius of the project site concentrated primarily northeast and south of the project site. In comparison there are 25,877 agricultural jobs/farm workers in Ventura County.

The potential for socioeconomic impacts is predominantly driven by the temporary influx of non-local construction workers seeking lodging closer to a project site. For Mission Rock, the few construction workers seeking lodging in the project area during construction would have a negligible reduction of the housing supply. As the new operations workers are anticipated to come from Ventura County, few, if any new operations workers are estimated to move closer to the project area. Thus, workers associated with Mission Rock would not affect existing residents (including any agricultural workers living in the project area) that may be seeking new housing in which to reside.

A socioeconomic impact that could disproportionately affect an EJ population is if the project were to displace minority or low income residents from where they live, causing them to find housing elsewhere. If this occurs, an EJ population may have a more difficult time finding replacement housing due to racial biases and possible financial constraints. As Mission Rock would not displace any residents or remove any housing, there would be no disproportionate impact to EJ populations from this project.

NOTEWORTHY PUBLIC BENEFITS

Staff defines noteworthy public benefits to include changes in local economic activity and local tax revenue that would result from project construction and operation. To assess the gross economic value of the proposed project, the applicant developed an input-output model using proprietary cost data and the IMPLAN Professional 3.0 software package. IMPLAN is an input-output model used by economists to measure the ripple effect on the local economy from the dollars spent on, or resulting from, a variety of activities including development, in this case, the construction and operation of Mission Rock.

The assessment used Ventura County as the unit of analysis.

Impact estimates reflect two scenarios; the construction phase and the operations phase of the project. For both phases, the applicant estimated the total direct, indirect, and induced economic effects on employment and labor income.

Direct economic effects represent:

- employment,
- labor income, and
- spending associated with construction and operation of the project.

Indirect economic effects represent expenditures on intermediate goods made by suppliers who provide goods and services to the project. Induced economic effects represent changes in household spending that occur due to the wages, salaries, and proprietor's income generated through direct and indirect economic activity.

IMPLAN Model Components

- Estimates do not represent a precise forecast, but rather an approximate estimate of the overall economic effect.
- Is a static model, meaning that it relies on inter-industry relationships and household consumption patterns as they exist at the time of the analysis.
- Assumes that prices remain fixed, regardless of changes in demand, and that industry purchaser-supplier relationships operate in fixed proportions.
    - Does not account for substitution effects, supply constraints, economies of scale, demographic change, or structural adjustments.

Socioeconomics Table 7 reports the applicant's estimates of the economic impacts/benefits that would accrue to Ventura County due to project construction and operation.

Socioeconomics Table 7
Mission Rock Economic Benefits (2015 dollars)

TOTAL FISCAL BENEFITS	
Estimated annual property taxes	Increased by $3,167,575 to $3,723,290
State and local sales taxes:	
Construction	Based on $17.4 million in local expenditures
	$1.34 million
Operation	Based on $1.81 million
	$135,750
School Impact Fees	Estimated total: $2,538
	$1,658 for Briggs Elementary School District
	$851 for Santa Paula Unified School District
TOTAL NON-FISCAL BENEFITS	
Total capital costs	$285 million - $335 million
Construction payroll (incl. benefits)	$30.85 million
Operations payroll (incl. benefits)	$2.4 million annually
Construction materials and supplies	$269 million
Operations and maintenance supplies	$1.81 million annually
TOTAL DIRECT, INDIRECT, AND INDUCED BENEFITS	
Estimated Direct Benefits	
Construction Jobs	93 (average), 146 (peak)
Operation Jobs	15
Estimated Indirect Benefits	
Construction Jobs	35
Construction Income	$1,824,110
Operation Jobs	3
Operation Income	$391,090
Estimated Induced Benefits	
Construction Jobs	97
Construction Income	$4,680,500
Operation Jobs	17
Operation Income	$381,970
Note: [1] Based on applicant's estimates. **Sources:** CAL 2015a and CH2M 2016g, pg. 7	

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 of the valuation. Mission Rock would have a nominal electrical generating capacity of 275 MW (255 MW net), co-located with battery units for the storage of electricity that can deliver an additional 25 MW. Therefore, BOE is responsible for assessing property value. The property tax rate is set by the Ventura County Auditor-Controller's office. Property taxes are collected and distributed at the county level.

Construction of the power plant would add approximately $285 million to $335 million in improvements (capital cost) and a property tax rate consistent with the current rate for the existing project site (1.111430 percent), the project would generate approximately $3.2 million to $3.7 million in property taxes during the first year of operation (CAL 2015a, pg. 5.10-17). The revenue collected from property taxes is distributed among school districts, special districts, redevelopment agencies, unincorporated areas, and incorporated areas (cities) by Ventura County. The remaining property tax generated above 1 percent (0.111430 percent) is distributed to various service agencies (e.g. school bond, community college bond, and water conservation district). The property is also subject to a 2015-2016 Special Assessment Fee of $3,609.82.

CONCLUSIONS

Staff concludes Mission Rock would not cause a significant adverse socioeconomic impact as a result of the construction or operation of the proposed project, or contribute to any significant cumulative socioeconomic impacts, for the following reasons:

1. The project's construction and operation workforce would not directly or indirectly induce a substantial population growth in the project area.

2. The project's construction and operation workforce would not have a significant impact on housing within the project area and would not displace any people or housing, or necessitate construction of replacement housing elsewhere.

3. The project would not result in significant environmental 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, parks and recreation, or schools.

4. The project's construction or operation would not make a cumulatively considerable contribution to any significant cumulative impacts.

5. The project's socioeconomic impacts on the EJ population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3** would be less than significant and would not be disproportionate.

PROPOSED CONDITION OF CERTIFICATION

SOCIO-1 The project owner shall pay the current one-time statutory school facility development fee to the Briggs Elementary School District and to the Santa Paula Unified School District as authorized by the Briggs Elementary School District Board Policy BP 7211 Facilities: Developer Fees and the Santa Paula Unified School District Board Policy BP 7211 Facilities: Developer Fees .

Verification: At least 30 days prior to the start of project construction, the project owner shall provide to the Compliance Project Manager (CPM) proof that the Compliance Building Official (CBO) has calculated the assessable covered and enclosed space consistent with local practices and proof of payment of the statutory development fees, based on the calculated space and current school development fees, to the Briggs Elementary School District and to the Santa Paula Unified School District.

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SOIL AND WATER RESOURCES

Marylou Taylor, P.E.

SUMMARY OF CONCLUSIONS

The proposed construction and operation of Mission Rock Energy Center ("Mission Rock" or "project") could potentially impact soil and water resources. This Preliminary Staff Assessment (PSA) analyzes the potential for the project to: cause accelerated wind or water erosion and sedimentation; exacerbate flood conditions in the vicinity of the project; adversely affect surface or groundwater supplies; degrade surface or groundwater quality; and comply with all applicable laws, ordinances, regulations, standards (LORS), and state policies. Staff also discusses the present and future flood risks in terms of the severity of consequences from flood hazards.

Staff concludes that the project would not result in significant adverse impacts that cannot be avoided or mitigated. With respect to flood risks from riverine flooding, levee failure, and dam failure, present-day risks are low. When considering the future effects of climate change, the future potential of flood risk is low to medium.

The recycled water supply and wastewater disposal facilities proposed for project operation are currently unavailable to serve the project. Staff is working with the Los Angeles Regional Water Quality Control Board to evaluate whether it is feasible for the proposed recycled water supply to be permitted for industrial use. Staff is also working with Ventura County staff to determine if and when the proposed wastewater disposal facility can receive the project wastewater. Because the applicant has not identified any alternatives to serve the project in the event these facilities ultimately do not become available, Mission Rock cannot demonstrate its recycled water supply or wastewater disposal method is reliable. Due to the uncertainty regarding the project's recycled water supply and wastewater disposal, Mission Rock's compliance with certain federal, state, and local LORS is indeterminate. However, if the recycled water and wastewater disposal facilities are able to obtain the proper permits needed to construct and operate the project, Mission Rock would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

Staff analyzed Mission Rock's potential effect of water quality impacts and flooding risks on environmental justice (EJ) populations represented in **Environmental Justice Figure 1** and **Environmental Justice Table 3**. Staff concludes that Mission Rock would not individually or cumulatively contribute to disproportionate flooding impacts and that mitigated water quality impacts would not disproportionately affect EJ populations. Soil and water resource impacts on the EJ population would be reduced to less than significant with adoption of conditions of certification.

METHODOLOGY FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Significance criteria are based on those listed in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Staff also referred to Ventura County

Initial Study Assessment Guidelines (VCPD 2011). Soil and water resources impacts would be significant if the project would:

- violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - result in substantial erosion or siltation on- or off-site;
    - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    - create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or
    - impede or redirect flood flows
- adversely impact open space used for production of resources by, among other things:
    - substantially impeding groundwater recharge;
    - causing substantial soil erosion or the loss of topsoil;
    - areas required for the protection of water quality and water supply
- require or result in the construction of new or expanded water, wastewater treatment, or storm water drainage facilities, the construction of which could cause significant environmental effects;
- have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years;
- result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- have impacts that are individually limited, but cumulatively considerable; or
- have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Although the CEQA Guidelines provide a checklist of suggested issues that should be addressed in an environmental document, neither the CEQA statute nor the CEQA guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. This is left to lead agency judgment and discretion, based on factual data and guidance from regulatory agencies and other sources where available and applicable. Staff assessed whether there would be a significant impact under the CEQA. Where a potentially significant impact was identified, staff proposed mitigation to ensure the impacts would be less than significant. A major component of

staff's determination regarding significance is the project's compliance with state and local LORS, as further described below.

While CEQA does not require an environmental assessment to analyze the impact of existing environmental conditions on a proposed project's future users or residents,[1] Public Resources Code section 25001 indicates the importance of state government, through the Energy Commission, to ensure a reliable supply of electrical energy while maintaining environmental quality protection.[2] The **Power Plant Reliability** section of this staff assessment analyzes how Mission Rock is designed, sited, and operated in order to ensure its safe and reliable operation. This **Soil & Water Resources** section discusses relative flood risk in terms of the likelihood of a flood causing operational failure of the proposed Mission Rock facility and the severity of consequences to safety of people (both on- and off-site) and electric grid reliability (local or system wide).

In additional to an environmental impact analysis, staff assessed whether the project would comply with the federal, state, and local environmental LORS described in **Soil & Water Resources Table 1**. These LORS, intended to protect human health and the environment, were established to ensure the best and appropriate use and management of both soil and water resources. A major component of staff's determination regarding significance is the project's compliance with these requirements applicable to the use and management of soil and water resources.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Soil & Water Resources Table 1 summarizes federal, state, and local LORS related to soil and water resources that are applicable to the proposed project. The table also indicates staff's assessment of whether the project would comply with these LORS. For further discussion, see the "Compliance with LORS" subsection below.

[1] Unless expressly required by certain CEQA provisions (e.g. airport, school, and housing projects).

[2] Staff notes that the evaluation of electric grid reliability is the joint responsibility of the Energy Commission, California Public Utilities Commission (CPUC), and California Independent Systems Operator (CA ISO).

Soil & Water Resources Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description	Project Compliance
Federal		
Clean Water Act (33 USC, §1251 et seq.)	The primary objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters. CWA Section 401: Requires certification that the proposed project is in compliance with established water quality standards. CWA Section 402: Direct and indirect discharges and storm water discharges into waters of the U.S. must be made pursuant to a National Pollutant Discharge Elimination System (NPDES) permit.	Section 401: Indeterminate, because the Patriot Wastewater facility is currently not licensed to operate and receive proposed wastewater from Mission Rock. Section 402: Yes, with implementation of Conditions of Certification **SOIL&WATER-1**, **-2**, and **-3**.
Resource Conservation and Recovery Act (40 CFR, part 260 et seq.)	Seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.	Yes, with implementation of conditions of certification discussed in **Worker Safety** and **Waste Management** sections of this staff assessment.
State		
California Constitution, article X, section 2	Requires that the water resources of the state be put to beneficial use to the fullest extent possible and prohibits the waste, unreasonable use or unreasonable method of use of water.	Yes, with the use of recycled water instead of potable water for non-potable uses.
Porter-Cologne Water Quality Control Act California Water Code, section 13000 et seq.	The State Water Resources Control Board (SWRCB) has the ultimate authority over State water rights and water quality policy. Porter-Cologne also establishes nine Regional Water Quality Control Boards (RWQCB) to oversee water quality on a day-to-day basis at the local/regional level. Section 13260: Requires filing with SWRCB or appropriate RWQCB a report of waste discharge for any discharge that could affect the water quality of the state. Section 13550: Requires the use of recycled water for nonpotable uses subject to recycled water being available and upon other criteria such as the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.	Section 13260: Indeterminate, because the Patriot Wastewater facility is currently not licensed to operate and receive proposed wastewater from Mission Rock. Section 13550: Yes, with the use of recycled water instead of potable water for non-potable uses.

Applicable LORS	Description	Project Compliance
California Water Code, sections 10910 through 10915	Requires public water systems to prepare water supply assessments (WSA) for certain defined development projects subject to the California Environmental Quality Act. Lead agencies determine, based on the WSA, whether protected water supplies will be sufficient to meet project demands along with the region's reasonably foreseeable cumulative demand under average-normal-year, single-dry-year, and multiple-dry-year conditions.	The proposed water use does not meet the criteria to require a WSA be completed.
Title 20, California Code of Regulations, sections 1301 through 1313	The regulations under Quarterly Fuel and Energy Reports (QFER) require power plant owners to periodically submit specific data to the California Energy Commission, including water supply and wastewater discharge information.	Yes, with implementation of Condition of Certification **SOIL&WATER-7**.
California's Water Recycling Criteria Title 22, California Code of Regulations, Division 4, section 60001 et seq.	California standards for levels of treatment and how recycled water is discharged and used. Effluent treatment standards are set and enforced by the state's nine regional water boards, which issue permits for individual water recycling projects.	Indeterminate, because Limoneira's recycled water facility is currently not licensed to provide its water to industrial users.
Local		
Ventura County General Plan (12-13-16 edition)	The Ventura County General Plan, amended December 2016, sets out a vision to guide future development in the county through the year 2020. Policies include: <u>Water Resources</u> 1.3.2.1 Consistency with County's Water Management Plan 1.3.2.2 Compliance with applicable county and state water regulations 1.3.2.3 Onsite septic systems 1.3.2.4 Impacts to quantity or quality of water resources <u>Flood Hazards</u> 2.10.2.2 – 2.10.2.4 Development within the floodplain	<u>Water Resources</u>: Indeterminate, because the Patriot Wastewater facility is currently not licensed to operate and receive proposed wastewater from Mission Rock. <u>Flood Hazards</u>: Yes, with implementation of Condition of Certification **SOIL&WATER-8**.
Ventura County Stormwater Quality Management, Ordinance 4142, Article 5, Sections 6950-Construction and 6951-Development	Requires construction and development projects that meet applicability criteria to control storm water runoff pollution through the use of approved construction and post-construction best management practices (BMPs).	Yes, with implementation of Conditions of Certification **SOIL&WATER-1** and **-3**.
Ventura County Floodplain Management, Ordinance 3841 and amendments thereto	Regulates development in floodplains to prevent potential loss of life and property, and ensures that buildings, fill and other materials do not obstruct flood flows and subsequently cause flooding impacts elsewhere outside of the floodplain.	Yes, with implementation of Condition of Certification **SOIL&WATER-8**.

Applicable LORS	Description	Project Compliance
Grading Requirements, Ventura County Building Code, Ordinance 4496, Article 4, Appendix J	Sets forth the rules and regulations to control excavation, grading and earthwork construction, including fills and embankments and the control of grading site runoff, including erosion sediments and construction-related pollutants.	Yes, with implementation of Condition of Certification **SOIL&WATER-1**.
Private Sewage Disposal Requirements, Ventura County Building Code, Ordinance 4496, Article 7, Appendix H	Sets forth the requirements for the design, upgrade, and repair of onsite wastewater treatment systems, which treat domestic type wastewater and return the treated wastewater to the soil environment on the same parcel of land.	Yes, with implementation of Condition of Certification **SOIL&WATER-6**.
State Water Policies		
SWRCB Resolution 75-58	Power Plant Cooling Water Policy: The purpose of the policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for power plants that depend on inland waters for cooling.	Yes, with the use of recycled water instead of potable water for non-potable uses.
Warren-Alquist Act Public Resources Code, Division 15, section 25008	The California Energy Commission's enabling statutes echo the Constitutional concern for beneficial use and protection of the state's water supplies, by promoting "all feasible means" of water conservation and "all feasible uses" of alternative water supply sources.	Yes, with the use of recycled water instead of potable water for non-potable uses.
California Energy Commission 2003 Integrated Energy Policy Report Public Resources Code, Division 15, section 25300 et seq.	Water Use and Wastewater Discharge Policy: Consistent with SWRCB 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy in 2003 that: • Limits the use of fresh water for power plant cooling unless alternatives are environmentally undesirable or economically unsound • Requires zero liquid discharge (ZLD) for wastewater unless shown to be environmentally undesirable or economically unsound.	• Yes, with the use of recycled water instead of potable water for non-potable uses. • Yes, because use of ZLD would be economically unsound.

PROPOSED PROJECT

The proposed Mission Rock would consist of five combustion turbine generators (CTGs) and associated auxiliaries with a combined nominal generation rating of 275 MW (net output). The project would also house 20 lithium-ion (and/or flow) batteries on site for electricity storage, providing an additional 25 MW of nominal capacity for up to four hours. The proposed Mission Rock would require the construction of a new electric transmission line, a new natural gas pipeline, and a new recycled water pipeline.

Refer to the **Project Description** section of this staff assessment for more information on major features of the proposed project. **Project Description Figures 2** and **4** show the location of proposed linear facilities with respect to Mission Rock. Information

relevant to the soil and water resources analysis is summarized below. For a complete detailed description of the proposed project, refer to the AFC (CAL2015a) and the applicant's related supplemental material.

SETTING AND EXISTING CONDITIONS

The project site is approximately 10 acres of land located within the Mission Rock Road community in unincorporated Ventura County, approximately two miles west of Santa Paula, California. Currently, the site is used for recreational vehicle and boat storage, and is paved with asphalt and concrete. Land uses in the vicinity of the project site are primarily heavy industrial. The Mission Rock Road community is surrounded by agriculture. The northern bank of the Santa Clara River is approximately 0.5 miles to the south, at approximately 10 miles upstream from the river's confluence with the Pacific Ocean. The Santa Clara River is the only natural perennial surface water within one mile of the site (CAL2015a §5.15.1).

SURFACE WATER FEATURES

Santa Clara River

The Santa Clara River is approximately 85 miles in length, stretching between the northern slope of the San Gabriel Mountains in Los Angeles County and the Pacific Ocean on the coast of Ventura County. The Santa Clara River watershed is approximately 1,626 square miles and contains surface-water storage reservoirs and dams including the Santa Felicia Dam at Piru Reservoir, the Pyramid Lake Dam, and the Castaic Lake Dam. While dams and reservoirs help control downstream flows of tributaries feeding into the river, they only regulate 34 percent of the watershed. Flows in the Santa Clara River can vary dramatically, often exhibiting very low flow in dry periods that increase exponentially during winter storm events. In the rainy season (November through March), river flows rapidly peak then subside depending on the intensity of rainfall events (WCVC 2014). The area along the Santa Clara River floodplain is biologically rich, with extensive high quality riparian habitat present along the length of the river. Although agricultural development has transformed areas adjacent to the river, the floodplain itself remains in a relatively natural state (CAL2015a §5.15.1).

The project site is located within the Santa Clara River watershed (see **Soil & Water Resources Figure 1**), which is under the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB). Water quality protection, as set forth in the Los Angeles Region Basin Plan, begins with the designation of beneficial uses for all waterbodies. Once beneficial uses are designated, appropriate water quality objectives are established and programs that maintain or enhance water quality are implemented to ensure the protection of beneficial uses. The designated beneficial uses, together with water quality objectives, form water quality standards. LARWQCB designates the

following beneficial uses for the Santa Clara River in the vicinity of the project site, identified in the Basin Plan as Santa Clara River Reach 3[3]: industrial service supply; industrial process supply; agricultural supply; groundwater recharge; freshwater replenishment; water recreation; warm freshwater habitat; wildlife habitat; rare, threatened, or endangered species; migration of aquatic organisms; wetland habitat (associated with a portion of the waterbody); and (potential for) municipal and domestic supply (LARWQCB 2014b).

As required under Section 303(d) of the federal Clean Water Act, LARWQCB assesses water quality data every two years to determine if waterbodies contain pollutants at levels that exceed protective water quality criteria and standards. When a water body is placed on the 303(d) list for a specific pollutant, the development of a Total Maximum Daily Load (TMDL) is initiated. TMDLs identify "daily load" limits of the pollutant that the waterbody can receive, with the ultimate goal of reducing the amount of the pollutant entering the water body to meet water quality standards. The project site is located along Santa Clara River Reach 3 which is on the 303(d) list as impaired for the following pollutants: total dissolved solids (TDS), toxicity, ammonia, and chloride (SWRCB2015).

Watercourses

In addition to the Santa Clara River, other watercourses are located in the vicinity of the Mission Rock site. Todd Barranca[4] is located west of the site and Cummings Road Drain is located east of the site (see see **Soil & Water Resources Figure 2**). These smaller tributaries that flow into Reach 3 of the Santa Clara River are designated by LARWQCB with the same beneficial uses (LARWQCB 2014b). The protection and regulation of flood control facilities and watercourses within unincorporated Ventura County are under the jurisdiction of the Ventura County Watershed Protection District (VCWPD).

Flooding Potential

To determine the likelihood of a hazard occurring, staff evaluated flood hazards based on Federal Emergency Management Agency (FEMA) maps. The magnitude of flood used nationwide as the standard for floodplain management is a flood having a probability of occurrence of 1-percent in any given year. This flood is also known as the 1-percent annual chance flood[5] or base flood. FEMA manages flood risk on the national level. The Federal Insurance Rate Map (FIRM) is the official map created and

[3] Reach 3 extends from of the Freeman Diversion Dam (approximately 2000 feet downstream of the project site) to the A Street Bridge in Fillmore (approximately 13 miles upstream of the project site).

[4] *Barranca* describes a water-carved gully that carries storm water from higher elevations to the Santa Clara River.

[5] Also commonly called a *100-year flood*, a *1-percent annual chance flood* refers to a flood that statistically has a 1 percent chance of occurring once at a particular location in any given year. Similarly, a *100-year storm* refers to a rainfall event that statistically has this same 1-percent chance of occurring. However, not every 100-year storm corresponds to a 100-year flood because several factors can independently influence the cause-and-effect relation between rainfall and streamflow. For instance, if a 100-year storm is preceded by smaller storms, the saturated ground could increase runoff and result in more flooding than expected.

distributed by FEMA for the National Flood Insurance Program (NFIP) that shows areas subject to inundation by the base flood for participating communities. FIRMs contain flood risk information based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood control works, and development. For areas where a detailed study has been completed, the Base Flood Elevation (BFE) is shown on the flood map. The BFE is the computed elevation, typically rounded to the nearest whole foot, to which flood water is anticipated to rise during the 1-percent annual chance flood event.

As a condition of participation in NFIP, Ventura County adopted a floodplain management ordinance that meets or exceeds the minimum NFIP criteria. The ordinance regulates new and existing development in mapped floodplains based on the effective FIRM for the area. Ventura County's effective FIRM is dated 2010, and the project site is located in Panel 0611C0790 of the flood hazard map. **Soil & Water Resources Figure 2** shows that the Mission Rock site is partially located within the 100 year flood zone (or the area of 1-percent annual chance flood).

Because flood hazards change over time, FEMA provides an opportunity to take a comprehensive look at the components and activities that contribute to flood risk. Within the FEMA's Risk Mapping, Assessment, and Planning (Risk MAP) Program, the discovery process seeks to determine which areas within a watershed require mapping, risk assessment, or mitigation planning assistance. For the Santa Clara River Watershed, a study was conducted to update the 2010 effective hazard maps to incorporate topographic changes, hydrologic changes, existing or anticipated development, and particular levees that no longer met the Federally-mandated levee certification regulations[6] (FEMA2014). Affected FIRM panels would be revised and reissued as a Physical Map Revision (PMR). This is done when a portion of a community's flood hazards need to be revised and updating the full countywide regulatory products is not necessary. The PMR would be used to create revised FIRM panels (FEMA2016).

In December 2015, FEMA released the Preliminary FIRM of Panel 0611C0790 which includes the Mission Rock site. Although Preliminary FIRMs are not final, they are presented as the best information available at the time. Preliminary data cannot be used to rate flood insurance policies or enforce the federal mandatory purchase requirement, but a community can reasonably utilize the preliminary data for regulating floodplain development before the map becomes final and effective (FEMA 1998). The Preliminary FIRM (see **Soil & Water Resources Figure 3**) shows that the entire Mission Rock site is located within the 1-percent annual chance flood area.

GROUNDWATER

The Mission Rock site is within the Santa Clara River Valley Basin, Santa Paula subbasin. Under natural conditions, groundwater flow is predominately seaward. In general, the water quality of the subbasin is considered to be highly variable. While there are localized areas with higher salt and nutrient levels (particularly in the vicinity of

[6] Found in the Code of Federal Regulations (44 CFR Section 65.10).

wastewater treatment effluent percolation ponds), average water quality in most of the sub-basins is below Basin Plan objectives. The worst water quality occurs in the western portion of the basin where TDS levels average around 1000 milligrams per liter (mg/L), with sulfates a major contributor. Deeper wells have also shown elevated levels of iron and manganese concentrations (CAL2015a §5.15.1.2). At the site, the depth to groundwater is reportedly greater than 17 feet below ground surface in a backhoe test pit excavated at the central portion of the project site in September 2008 (CAL2015a Appendix 5.14A).

The Santa Paula subbasin is a court adjudicated groundwater basin. The primary groundwater management objective for the Santa Paula basin is to ensure that production from the basin does not exceed the long-term sustainable yield of suitable quality groundwater for current and anticipated future uses (i.e., municipal, domestic, agricultural, and industrial). In an effort to prevent overdraft, the stipulated judgment filed 1996 in Ventura County Superior Court and amended in 2010 established a Technical Advisory Committee (TAC) required to establish a monitoring program (including future pumping amounts, groundwater levels, changes in storage, and analyses of groundwater quality), initiate studies to better understand the factors affecting basin yield, and consider and attempt to agree upon the safe yield of the basin (PAULA2017).

The judgment provided an “assumed initial yield” of the basin at 33,500 acre-feet per year (AFY) that corresponds to the maximum amount of pumping at the time of the judgment in 1996. The judgment governs groundwater production on a seven-year rolling average, which allows parties[7] to produce more or less than their allocation in any particular year, as long as their rolling seven-year average does not exceed their allocation. Because this initial yield did not necessarily represent the long-term safe yield, the judgment required the TAC to refine the yield based on a seven-year study. Based on the 2003 study of data collected from 1996 to 2003, the TAC did not make any recommendation to the court to change the basin yield at that time (PAULA2017).

In 2014, the TAC commissioned a third-party, independent evaluation of the safe yield which is currently in progress (UWCD2016). If present yield studies determine that overdraft is occurring, the parties may seek an order form the court to reduce the cumulative pumping allocation, which would trigger reductions that follow a six-stage cutback protocol specified in the judgment (PAULA2017).

SOIL FEATURES

The proposed Mission Rock site would be located just north of the Santa Clara River, within the Santa Clara River Valley. The site would be immediately adjacent to the Santa Clara River channel in the valley and therefore the dominant soil types would be expected to be a mix of sand, silt, and clay, over-bank deposits.

[7] Parties of the judgment are United Water Conservation District, the City of Ventura, and the Santa Paula Basin Pumpers Association (SPBPA). The SPBPA is a consortium of water users, primarily farming interests but also includes the city of Santa Paula (PAULA2017).

The proposed project site historically consisted of Metz loamy sand (MeA and MfA), and Pico sandy loam (PcA) surface soil types. The site slopes are expected to be relatively flat, between zero and two-percent (CAL2015a). In 1991, 811-cubic yards of total petroleum hydrocarbon (TPH)–contaminated soil was remediated by Industrial Science Corporation of Ventura (CAL2015b). Following remediation the site was resurfaced with asphalt and concrete. The laydown area immediately north of the main site is currently covered in gravel and used as an auto salvage yard (CAL2015a).

The linear facilities also cross various loamy soil types. The natural gas and process water supply pipeline is expected to cross sandy loam, silty loam, and clay loam soil units. The transmission line would be the longest linear feature and would extend beyond the valley floor into the adjacent mountainous area to the west of the project. The transmission line would be expected to cross a wide variety of soil types and slopes as shown by the applicant in the AFC, Soils Section 5.11. Some segments of the transmission line are expected to cross steep slopes.

SOIL CONTAMINATION

A Phase I Environmental Site Assessment (ESA) was conducted in September 2015 by a consultant on behalf of the applicant. The report indicates that remediation of soil containing total petroleum hydrocarbon (TPH) was performed at the project site in July 1991. The TPH-containing soil was identified at various areas of the project site between March and June 1991, and was believed to be associated with historic land use activities (automobile salvage yard). The soil remediation activities included the bioremediation of approximately 811 cubic yards of TPH-containing soil, which was completed and documented by Industrial Science Corporation of Ventura, California in a letter dated November 15, 1991. TPH concentrations were reduced from concentrations ranging from 1,000 to 4,000 milligrams per kilogram (mg/kg) to an average TPH concentration of 310 mg/kg. Based on the information collected and reviewed during the preparation of the Phase I ESA, the report did not identify any recognized environmental conditions associated with the project site or adjacent properties that require further assessment and/or investigation (CAL2015b Appendix 5.14A). Further analysis of soil contamination is addressed in the **Waste Management** section of this PSA.

LOCAL WATER SUPPLY AND WASTEWATER SERVICE

The proposed project site is located within the Mission Rock Road community. The potable water supply to this area comes from the city of Santa Paula.

The city of Santa Paula's wastewater system accepts all the flow from the city through over 50 miles of sewer lines and a Wastewater Recycling Facility. Built in 2010, the Wastewater Recycling Facility can treat 3.4 million gallons per day (MGD) to a tertiary level and can be expanded in the future to treat 4.2 MGD. Although the city's recycled water meets the requirements for "disinfected tertiary recycled water", it is not available to the Santa Paula area due to elevated concentrations of chloride. Because the groundwater in the Santa Paula Groundwater Basin is beneficially used for domestic supply and other purposes, recycled water cannot contain trace constituents and other substances in excess of the limits set by LARWQCB. The city plans to resolve this prior to implementation of its recycled water program. Potential future uses are agricultural irrigation and commercial/industrial recycled water use. Until then, all recycled water is

discharged to an unlined pond located adjacent to the facility for controlled percolation to the groundwater (PAULA2017).

The Mission Rock site is located in an unsewered area of unincorporated Ventura County. The Santa Paula Wastewater Treatment Plant is four miles away from the site and the nearest sewer connection is two miles away. The current occupants of the site discharge wastewater to an on-site septic storage system with sewage disposal services provided by a vendor.

PROJECT DESCRIPTION

FACILITY CONSTRUCTION

Construction and commissioning of Mission Rock is expected to occur over a 23-month period. The project site is currently paved, and consists of approximately 9.79 acres. Site preparation includes the demolition of all structures and the complete removal of existing pavement (CAL2015a §5.15.1.7). Temporary construction facilities include a 2.89-acre area for worker parking and construction laydown located directly northeast of the project site on a graveled lot currently used as storage for an automobile wrecking yard (CAL2015a §5.11.1).

As described above, the Mission Rock site is located in a flood hazard zone identified by FEMA as being subject to a 1-percent annual chance flood. The applicant proposes to elevate the site above the base flood elevation by adding imported fill material, totaling approximately 120,000 cubic yards (CH2M2016c Attachment DR70-1). Grading equipment would work up to the property line from within the site during the first few lifts of soil, then gradually work farther back into the site until the final grades are met (CH2M2017b §145). The Grimes Rock mining facility (3500 Grimes Canyon Road, Fillmore CA), about 18 road miles away, has verified their ability to supply the needed quantity of fill material (CH2M2016c §90).

The preliminary grading plan (see **Project Description Figure 10**) shows that the depth of fill would vary across the site, ranging from 5.27 feet at the boundary with Shell Road and up to 10.05 feet at the southernmost corner of the site. When earthwork is complete, the final elevation of the site would be 191.9 feet[8] and all equipment foundation footings would be constructed at elevation 192.9 feet. A small retaining wall approximately four feet tall would be constructed along the border with Shell Road, and remaining borders of the site would be at 2:1 (horizontal:vertical) slopes to existing grade (CAL2015a §5.15.1.3, CH2M2016c Attachment DR70-1). The fill slopes of the site would end at the edge of the property lines (CH2M2017b §145).

[8] Throughout this section, elevations are reported relative to the Northern American Vertical Datum of 1988 (NAVD88) unless otherwise indicated.

The applicant also proposes construction of the following linear facilities (see **Soil & Water Resources Figure 2**) to support Mission Rock operations (CAL2015a §5.11.1):

- A 6.6-mile overhead transmission line (Generator Tie-Line) that runs from the project site to the Santa Clara Substation owned by Southern California Edison.
- A 2.4-mile natural gas pipeline that runs northwest and then southwest from the project site to the existing SoCalGas high-pressure gas transmission pipelines.
- A 1.7-mile pipeline that follows the overhead transmission line to bring recycled water to the project site from Limoneira Company's existing recycled water line.

SoCalGas would construct the natural gas pipeline and the applicant would construct the overhead transmission line and recycled water pipeline.

Soil Erosion and Storm Water Control

Prior to construction, the applicant would prepare a Storm Water Pollution Prevention Plan (SWPPP) to control soil erosion during construction of Mission Rock. Best management practices (BMPs)[9] would be implemented to reduce erosion and prevent silt from being discharged off site. Recycled water would be sprayed on the soil in construction areas to suppress dust and minimize the windblown erosion of soil from the project site. Sediment barriers, such as straw bales, sand bags, straw wattles, or silt fences, would be placed to prevent offsite flow of sediment-laden water. Other BMPs may include mulching, physical stabilization, berms, ditches, and surface protections (CAL2015a §5.11.4).

To control onsite storm water, the applicant expects that temporary BMPs such as earth dikes, drainage swales, and gravel bags, would be installed to channel storm water to a temporary detention pond in the southwest corner of the site. A temporary pump installed in the detention pond would move the storm water to a slope-drain down the 2:1 slope and discharge through a velocity dissipation device to the existing drainage ditch leading to the Santa Clara River (CH2M2017b §147).

The applicant indicates that final determination of site-specific construction BMPs, including location and exact type of BMPs, would be designed during the project's detailed design phase, which would occur post-certification if the project is approved. The applicant states that BMPs would be consistent with the guidelines of the California Stormwater BMP Handbook (CH2M2017b §144).

Water Use

The construction water supply would be recycled water provided by Limoneira Company[10]. A semi-mounted tanker trailer would be delivered to the site. The tank

[9] 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.

[10] Limoneira Company is further discussed in the "Facility Operation" subsection below.

would be mounted on supports and filled with water by water tanker truck deliveries as needed (CH2M2016c §78). Construction activities would require a relatively limited amount of water, primarily for dust suppression (8 hours per day for approximately 23 months) intermittently used as needed (CH2M2017b). The estimated demand for dust control and soil compaction would be approximately 50 gallons per minute (gpm) on average per hour, and approximately 200 gpm at peak use (CAL2015a §5.15.1.7). Staff calculates the total use of recycled water for construction activities to be roughly 18 acre-feet.

Wastewater Management

Wastewater generated during construction would include sanitary waste and could include equipment wash down water and storm water runoff.[11] Construction-related wastewater would be classified as hazardous or nonhazardous then managed according to appropriate LORS. Hazardous wastewater would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility (CAL2015a §5.14.1.2). Sanitary waste would be collected in portable, self-contained toilets with periodic pumping and disposal offsite by a permitted vendor. Equipment wash water would be contained at designated wash areas and then disposed of offsite at an appropriately permitted facility. Storm water runoff would be managed in accordance with a storm water management permit, which would be obtained before start of construction. Nonhazardous wastewater generation would be minimized by water conservation and reuse measures (CAL2015a §5.14.4.1).

FACILITY OPERATION

Soil Erosion and Storm Water Control

The Mission Rock site would consist of structures for turbines, batteries, and other facilities, paved roads, paved parking areas, and graveled areas. BMPs would be implemented to reduce erosion and prevent sediment from being discharged offsite. Storm water that does not infiltrate the project site would be collected by a new storm water drainage system. The applicant proposes to install a grouted riprap drainage outfall down the 2:1 side slope and a velocity dissipation device to discharge storm water to the existing drainage ditch leading to the Santa Clara River (CH2M2017b §147). Storm water that could potentially be exposed to pollutants, such as oils and greases, would be directed to a new oil-water separator.

Water Use and Supply

Mission Rock would use about 10 AFY and up to 67 AFY of recycled water under maximum use conditions. Recycled water from the Limoneira Company would be used for service water, chiller fill and makeup, and for fire protection, in addition to general (non-potable) needs such as landscaping and hose bibs (equipment and surface washdown). Limoneira's water supply is a mixture of reclaimed sources, which would

[11] The AFC also indicates that wastewater could include excavation dewatering (if dewatering is required) which would be contained in portable tanks and sampled before offsite disposal (CAL2015a §5.14.4.1). Staff notes that the depth to groundwater at the site combined with the addition of imported fill material to elevate the site would make the likelihood of dewatering very low.

include lemon fruit wash water from its packing house and sanitary sewer discharge from residential farm worker housing (CAL2015a).

Rental demineralizer equipment including trailers or portable demineralizer skids would use the recycled water available through the pipeline from the Limoneira Company, demineralize it, and supply it as demineralized water to the plant. A portion of the incoming raw process water would be treated by a demineralizer and then stored in a demineralized water storage tank. The product water from the demineralizer system would be stored in an 892,000-gallon demineralized water storage tank, which would be nominally sufficient for 32 hours of plant use. The high quality demineralized water would be used for the combustion turbine water injection for NOx reduction and power augmentation, and for online washing of the combustion turbine compressor section (CAL2015a).

A minimal amount of potable water, approximately 0.15 AFY would be used for site personnel. Mission Rock would use potable water for safety showers, sanitary uses, eye-wash stations, and drinking water. Potable water is currently provided to the site by the city of Santa Paula through an existing one-inch water line (CAL2015a). Alternatively, potable water would be trucked onsite by the applicant in the event of an interruption in potable water from the city (CH2M2017i).

Wastewater Management

Facility Drainage

Water from stormwater contact on facility equipment, equipment leakage and washdown, and sample drains would be collected in a system of floor drains, hub drains, sumps, and piping, and routed to the facility's concrete-lined wastewater sump. The sump would be equipped with an oil-water separator. Water from this sump will be sampled and analyzed at an approved lab. If contamination is present, the water will be trucked offsite for disposal at an approved wastewater disposal facility. If sampling results show no contamination, the water will be discharged to the storm water drainage system (CAL2015a).

Process Wastewater

Industrial process wastewater would be discharged to the Patriot Wastewater facility (formerly operated by Southern California Waste Water Company) to an existing pipeline in Shell Road, adjacent to the Mission Rock site. Wastewater from infrequent combustion turbine water washes and from the fuel filtration skid(s) will be collected in holding tanks or sumps and will be discharged into the industrial wastewater effluent pipe to Patriot Wastewater (CAL2015a).

No wastewater will be generated from the water treatment (demineralization) process, since regeneration of the cationic and anionic resin will occur off-site via contracted vendor. As the ion exchange resin capacity becomes exhausted, the trailer unit will be hauled offsite for disposal or regeneration by the trailer service provider and a fresh trailer-mounted system will replace it (CAL2016a).

The applicant evaluated the use of zero liquid discharge (ZLD) technology and has asserted that it would not be economically feasible for Mission Rock. Given the

relatively small amount of water needed to operate the proposed project, a ZLD would be economically unsound and would offer small, if any, environmental advantages, especially when the effects of frequently trucking salt cake to a landfill are considered (CAL2016a).

Sanitary Wastewater

The Mission Rock site is located in an unsewered area of unincorporated Ventura County. The Santa Paula Wastewater Treatment Plant is four miles away from the site and the nearest sewer connection is two miles away. Wastewater from facility sinks, toilets, and showers will be disposed of to the onsite septic storage system (CAL2015a). When the septic system requires service, the waste would be hauled to a municipal treatment works (CAL2016a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This subsection provides an evaluation of the expected direct, indirect, and cumulative impacts on soil and water resources that could be caused by the construction and operation of Mission Rock. Staff's analysis consists of a description of the potentially significant impacts, gathering data related to construction and operation of the project, then reaching a conclusion to determine whether the project presents potentially significant impacts. If staff determines there is a significant impact, then the applicant's proposed mitigation is evaluated for sufficiency. Staff may or may not recommend additional or entirely different mitigation measures that are potentially more effective than those proposed by the applicant. Mitigation is designed to reduce the effects of potentially significant impacts to a level that is less than significant.

Potential impacts include the project's effect on soil erosion, surface water quality, surface water hydrology, groundwater quality, water supplies, and flooding.

CONSTRUCTION

Soil Erosion and Storm Water Control

Water quality can be affected by sedimentation caused by erosion, by runoff carrying contaminants, and by direct discharge of pollutants (point-source pollution). Soil erosion can occur during construction and grading activities when disturbed soil is exposed and most vulnerable to detachment by wind and water. Increased sedimentation, over and above the amount that enters the water system by natural erosion, can cause many adverse impacts on aquatic organisms, water supply, and wetlands. Contamination of a nearby water body can occur from wastewater that is directly discharged (point-source) or storm water runoff that has been in contact with toxic materials or surfaces (contact runoff)[12]. Contaminants and toxic substances can also attach to sediments and travel in sediment-laden water flows.

[12] *Contact runoff* in this analysis refers to storm water in contact with exposed polluted or toxic materials and/or surfaces that can potentially result in contaminated runoff (containing trace oil, chemicals, metal, toxic substances, or other pollutants).

Construction of the proposed project would affect the areas listed in **Soil & Water Resources Table 2**. "Active Earthwork" represents activities that would use equipment to physically move soil such as excavating, grading, digging, removing vegetation, trenching, and adding and compacting imported fill material or backfill material. "Construction Area" describes the general construction site area that could experience disturbance such as vehicle and foot traffic and temporary laydown of equipment and materials. The applicant's estimates for the linear facilities assume a 50-foot wide construction corridor for the entire length of the transmission line and a 75-foot wide construction corridor for each underground pipeline (CAL2015b Appendix 5.11A).

As shown in **Soil & Water Resources Table 2**, active earthwork would cover the entire Mission Rock site for six months to perform demolition of all structures and the complete removal of existing pavement followed by the addition of approximately 120,000 cubic yards of imported fill material to elevate the entire site. While ground disturbance during the remaining 18 months of construction could occur over the entire site, the applicant estimates that approximately 75 percent of the project site (7.34 acres) would have bare soil exposure. The construction laydown area is level and currently covered with gravel, which would remain unchanged for the duration of Mission Rock construction. For each linear facility, the respective construction corridor would mostly remain natural vegetation. The applicant assumes construction of the transmission line would occur in segments resulting in only 10 percent of the construction corridor (about 4.31 acres) of unprotected soil at any given time during construction. Installation of each transmission line pole would require a 4-foot by 4-foot area of earthwork (totaling about 0.03 acres). Construction of both the underground pipelines assumes a 4-foot wide trench with approximately 50 percent of each construction corridor exposed bare soil during construction activities (CAL2015b Appendix 5.11A).

Soil & Water Resources Table 2
Area and Duration of Potential Soil Impacts during Construction

Location	Active Earthwork		Construction Area	
	Acreage	Duration (months)	Acreage	Duration (months)
Mission Rock Site (9.79 acres)	9.79	6	7.34	18
Site Laydown Area (2.89 acres)	0	0	0	24
Transmission Line (43.1 acre construction corridor)	0.03	12	4.31	18
Natural Gas Pipeline (21.8 acre construction corridor)	1.16	6	10.9	12
Recycled Water Pipeline (15.5 acre construction corridor)	0.83	6	7.74	12

Source: CAL2015b Appendix 5.11A

The proposed project is subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit. In California, these NPDES requirements are typically met through California's *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) administered by the

California State Water Resources Control Board (SWRCB) and enforced by the Regional Water Quality Control Boards. These requirements apply to traditional construction sites (e.g. residential, commercial, and industrial development) as well as Linear Underground/Overhead Utility Projects (e.g. underground pipelines and overhead transmission lines). Prior to construction activity that would disturb one or more acres of land, the applicant must demonstrate they would comply with the Construction General Permit, which includes preparation of a Storm Water Pollution Prevention Plan (SWPPP). All SWPPP documents must be prepared by a Qualified SWPPP Developer (QSD) and implemented by a Qualified SWPPP Practitioner (QSP).

The SWPPP must be appropriate for the type and complexity of the proposed project and must be developed and implemented to address project-specific conditions. It identifies potential pollutants and preliminarily identifies the BMPs that would be implemented to protect storm water quality and to prevent or minimize soil erosion during Mission Rock construction. It also describes procedures for BMP inspection and maintenance, as well as details of the site's Construction Site Monitoring Program. Six categories of BMPs are anticipated for Mission Rock construction activities:

- Erosion Control - protects the soil surface and prevents soil particles from being detached by rainfall, flowing water, or wind (e.g. soil binders).
- Sediment Control - traps soil particles after they have been detached and moved by rain, flowing water, or wind (e.g. silt fences, fiber rolls).
- Tracking Control - minimizes the amount of dirt, mud, or dust that is generated by construction equipment, and can thus be tracked or blown off the site (e.g. stabilized construction entrance/exit).
- Wind Erosion Control - reduces dust generated from disturbed soil surfaces (e.g. water sprinkled for dust suppression, cover soil stockpiles).
- Non-storm Water Management – housekeeping and procedural practices to minimize or eliminate the discharge of potential pollutants from construction activities (e.g. vehicle and equipment maintenance, pile driving operations, concrete curing).
- Waste Management - properly manages and disposes of construction site waste to reduce the risk of pollution from materials (e.g. spill prevention and control, hazardous waste management, solid waste management, management of concrete trucks' washout wastewater).

Staff agrees that proper implementation and maintenance of BMPs during construction would minimize impacts on water quality. Compliance with the Construction General Permit requires implementation of specific BMPs as well as numeric action levels (NALs) to achieve minimum water quality standards[13]. Because Mission Rock construction activities would be subject to storm water regulatory requirements and the applicant would comply with the Construction General Permit, the impacts of Mission Rock construction on surface water quality would be **less than significant**.

[13] Technology-based NALs are numeric benchmark values for certain parameters (pH and turbidity) that, if exceeded in effluent sampling, trigger the discharger to take actions. The purpose of NALS is to assist dischargers in evaluating the effectiveness of their BMPs.

As discussed above (in Project Description), the applicant indicates that final determination of site-specific construction BMPs, including location and exact type of BMPs, would be designed during the project's detailed design phase, which would occur post-certification if the project is approved (CH2M2017b §144). Because the Construction General Permit stems from federal regulations of the Clean Water Act, it is not within the purview of the Energy Commission's authority. Although the LARWQCB is ultimately responsible for verifying and enforcing requirements of the Construction General Permit, it has directed Ventura County and other municipalities to implement a Development Construction Program that includes the review and approval of a project's SWPPP as part of the local grading permit process. (For additional information about compliance with these Ventura County requirements, see the "Ventura County Code Ordinance 4142" discussion under the subsection Compliance with LORS, below.) Staff recommends Condition of Certification **SOIL&WATER-1** which requires the applicant to comply with the requirements of the Construction General Permit and provide the Compliance Project Manager (CPM) with copies of any correspondence between the project owner and the State Water Resources Control Board or the LARWQCB about compliance with the permit.[14] Staff also proposes Condition of Certification **SOIL&WATER-3** for compliance with the additional requirements contained in the county's Development Construction Program.

Groundwater

Construction activities can potentially impact both groundwater quantity and quality. Temporary pumping could lower the groundwater level at the pumping site (drawdown) which could potentially reduce the well yield of any nearby wells, reduce required supply for any nearby groundwater-dependent habitat, and induce intrusion of nearby subsurface contaminants. Additional water quality impacts could occur if construction activities allow onsite contaminants to reach groundwater, either directly (when excavation reaches groundwater level) or through soil infiltration.

As described in the AFC, the applicant does not expect significant impacts on groundwater resources because groundwater would not be used for construction activities and compliance with the Construction General Permit would minimize or eliminate pollutant spills that could potentially infiltrate to groundwater (CAL2015a §5.15.1.7). While staff agrees with the applicant, staff notes that LARWQCB imposes specific requirements for wastewater related to hydrostatic testing and construction dewatering (described further in "Wastewater Management" below). Staff recommends Condition of Certification **SOIL&WATER-2** to ensure any contaminated groundwater collected during hydrostatic testing and/or dewatering would be properly disposed in accordance with LARWQCB requirements. With implementation of Conditions of Certification **SOIL&WATER-1** and **-2**, the impacts of Mission Rock construction on groundwater quality and quantity would be **less than significant**.

[14] More information about the roles and responsibilities of the CPM can be found in the **Compliance Conditions and Compliance Monitoring Plan** section of this staff assessment.

Water Supply

The construction water supply would be recycled water provided by Limoneira Company.[15] Based on information provided in the AFC, staff calculates the total use of recycled water to be roughly 18 acre-feet over the 23-month construction period. Because recycled water would be used rather than potable water, Mission Rock construction activities would have **no impact** on the city of Santa Paula's potable water supplies.

Wastewater Management

Wastewater generated during construction would include sanitary waste, storm water runoff, equipment wash-down water, concrete-washout wastewater, and wastewater from hydrostatic testing[16]. Wastewater that is not properly disposed could potentially contaminate groundwater through soil infiltration, as well as a nearby water body through direct discharge or contact runoff.

The applicant states that all construction-related wastewater would be classified as hazardous or nonhazardous then managed according to appropriate LORS. Hazardous wastewater would be collected by a licensed hazardous waste hauler for disposal at a licensed hazardous waste facility (CAL2015a §5.14.1.2). Compliance with the

Construction General Permit would implement BMPs to properly manage storm water runoff, equipment wash-down water, concrete-washout wastewater, and sanitary waste. Compliance with the following NPDES permits adopted by LARWQCB would specifically regulate discharges of hydrostatic test waters and construction dewatering (if required):

- *NPDES* Permit No. CAG674001: *Discharges of Low Threat Hydrostatic Test Water to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties*.
- NPDES Permit No. CAG994004: *Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties.*

These permits specify discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that minimum water quality standards are achieved. Because Mission Rock construction wastewater discharges would be subject to federal regulatory requirements and the applicant would obtain the appropriate NPDES permit, the impacts of the project's construction wastewater discharges on soil and water resources would be **less than significant**.

Staff recommends Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2** which would require the applicant to comply with the applicable permits based on project discharges and provide the compliance project manager (CPM) with copies of any correspondence between the project owner and the State Water Resources Control Board or the Regional Water Quality Control Board about compliance with the permit.

[15] Limoneira Company is further discussed in the "Facility Operation" subsection below.

[16] Although the AFC did not specifically identify concrete-washout wastewater and wastewater from hydrostatic testing, staff notes that equipment foundations would include concrete and the proposed natural gas pipeline would require high-pressure testing.

Additional conditions of certification in the **Waste Management** section of this staff assessment would require reports of hazardous waste disposal in accordance with all applicable federal, state, and local requirements.

OPERATION

Soil Erosion and Surface Water Quality

Onsite soil erosion can potentially impact surface water quality by increasing the amount of sediment that enters the water system. Water quality can be affected by sedimentation caused by erosion, by runoff carrying contaminants, and by direct discharge of pollutants (point-source pollution). As land is developed, the new impervious surfaces can send an increased volume of runoff containing oils, heavy metals, and other contaminants (non-point source pollution) into adjacent water bodies. To protect the project's receiving water body (Santa Clara River) from site storm water discharges, Mission Rock would be required to comply with the county of Ventura's post-construction storm water design guidelines.

The proposed project would be subject to the local post-construction storm water BMP design requirements. Mission Rock would be constructed in the county of Ventura, within the permit boundaries of a Phase I municipal separate storm sewer system (MS4), regulated by the LARWQCB. In 2010, the LARWCB adopted the municipal NPDES Permit Order 2010-0108 (MS4 permit) for the county of Ventura and other member municipalities in the county. Development and redevelopment projects in the region that meet specified criteria, which include the proposed project, are subject to the Planning and Land Development Program requirements described in the MS4 permit.

The county's 2011 Technical Guidance Manual (TGM) provides guidance for implementation of storm water management control measures in order to meet performance criteria of the MS4 permit (TGM 2011).

Mission Rock would be required to follow the TGM, based on the project's redevelopment "activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site." Construction of Mission Rock would result in impervious surfaces covering about 37 percent of the 9.79-acre project site (see **Soil & Water Resources Table 3**). With 3.6 acres, or about 157,700 square feet, of impervious surface area, Mission Rock would significantly exceed the threshold.

The purpose of the post-construction storm water requirements is to minimize the influence that development projects would have on water quality and regional runoff through the implementation of runoff control BMPs. This is referred to as Low Impact Development (LID) in the TGM. LID-based strategies integrate small-scale measures scattered throughout the development site that are designed to use natural drainage features to capture and manage storm water on-site. LID reduces peak runoff by allowing rainwater to soak into the ground, evaporate into the air, or collect in storage receptacles for irrigation and other beneficial uses. By using a comprehensive source control strategy, LID promotes development that more closely maintains pre-development hydrology.

Regulated projects can comply by developing a conceptual plan that describes which BMPs could be used to satisfy the TGM criteria. The plan should describe what site design principles and techniques, source control measures, retention BMPs, biofiltration BMPs, and treatment control measures would be used to meet the design requirements. The selection process is based on achieving an effective impervious area of no more than 5-percent of the project area and retaining storm water onsite. Additional requirements may include hydromodification control to minimize changes in the timing and volume of storm water runoff from a site. The TGM provides guidance for applicable projects to implement hydromodification control measures that aim to match pre-development storm water runoff discharge rates, velocities, and durations (TGM 2011).

To ensure that post-construction BMPs would remain effective upon project completion and continued occupancy, the MS4 requires that member municipalities implement a tracking system and an inspection and enforcement program. In Ventura County, all development projects that are subject to post-construction BMP requirements must provide a plan for the operation and maintenance of all structural and treatment controls. Chapter 7 of the TGM identifies the basic information that should be part of a maintenance plan, including inspection and maintenance activities, method of financing maintenance activities, and annual reporting to the county. Project owners are also required to enter into a Covenant for Maintenance with the county, which is a legally enforceable agreement accepting the responsibility for adequate future maintenance of all installed storm water BMPs. The county has prepared a standardized agreement for use with projects subject to this requirement.[17]

Staff proposes Condition of Certification **SOIL&WATER-3**, which would require the owner to comply with the county's Planning and Land Development Program design criteria for its post-construction storm water control BMPs, hydromodification control measures, and Maintenance Plan. (For additional information about compliance with these Ventura County requirements, see the "Ventura County Code Ordinance 4142" discussion under the subsection Compliance with LORS, below.)

Furthermore, Condition of Certification **WORKER SAFETY-2** would require a Hazardous Materials Management Program, and Condition of Certification **WASTE-8** would require an Operation Waste Management Plan. These documents would be developed by the applicant to address handling, transportation, tracking, usage, storage, emergency response, spill control and prevention, training, record keeping, and reporting of hazardous wastes on the site. Other conditions of certification in the **Waste Management** section of this staff assessment address wastes, including cleanup of all spills of hazardous substances. With implementation of these conditions of certification, impacts from soil erosion and polluted runoff would be avoided or reduced to **less than significant** during operation of the proposed project.

[17] The county's form for the Covenant for Maintenance is available at http://onestoppermit.ventura.org/ on the Surface Water Quality Section's "Forms" page.

Groundwater

Groundwater quality impacts could occur if operation allows contaminants to reach groundwater through soil infiltration. The same measures implemented to avoid or reduce impacts to polluted runoff (see “Surface Water Quality” above) would also protect groundwater quality. Wastewater generated during operation would be managed to reduce impacts to groundwater (see “Wastewater Management” below). For these reasons, the operational impacts of Mission Rock on groundwater quality would be **less than significant**.

Operation of Mission Rock would not include any groundwater pumping, so the project would not directly cause groundwater drawdown. However, the project’s use of recycled water from Limoneira could potentially result in an indirect impact on the groundwater basin. Staff’s evaluation of this potential impact is discussed in the “Indirect Impacts” subsection below.

Water Supply and Use

Mission Rock proposes to use potable water from the city of Santa Paula for domestic and sanitary uses. Estimated potable water use would be 0.15 acre-feet at maximum per year. The city of Santa Paula is the retail water provider for this service area and currently supplies potable water to the business presently occupying the Mission Rock site. The Santa Paula City Council passed a resolution on October 17, 2016 opposing Mission Rock and instructing the city to not provide potable or recycled water to the proposed project (PAULA2016b). In the event that potable water is denied to the project

site, the applicant is prepared to transport potable water to the site by truck. The applicant uses this method to provide potable water to several other power generation facilities in California where potable water is not readily available. Because only a small quantity of potable water is required for drinking, safety showers, and sanitary purposes, this water can be purchased in suitable quantities from a variety of suppliers without the need for any additional regulatory approvals (CH2M2017i). For these reasons, staff believes that the use of potable water for the proposed project would not adversely impact the city’s potable water supplies.

Recycled water from the Limoneira Company would supply Mission Rock with water for industrial (non-potable) uses. Because Mission Rock is expected to run for a few hours at a time (in the later afternoon/early evening on hot summer days when demand is high), it can store significantly more service water and demineralized water onsite than is needed to satisfy instantaneous demand. The project would maintain a full tank of service water and a full tank of demineralized water whenever recycled water is available from Limoneira. A full tank of demineralized water, on its own, would allow for 32 hours of operations. This onsite storage capacity compensates for fluctuations in recycled water supply. Also, Limoneira is the largest citrus grower in North America and has made substantial investment in its water treatment facility. Their supply of recycled water will likely be larger during summer season when Mission Rock’s water demand will be highest.

The availability of recycled water from Limoneira to Mission Rock is contingent on approval by LARWQCB. Limoneira’s permit is referred as Waste Discharge Requirements / Water Recycling Requirements (WDRs/WRRs) which specifies the

requirements, provisions, and limitations for the production and use recycled water. Its WDRs/WRRs allows for the recycled water produced by its wastewater treatment plant to be used for surface irrigation of its own alfalfa and hay crops.[18] Any discharge of wastewater from the treatment system at any point other than specifically described is prohibited (including offsite use by a separate end-user for industrial purposes such as Mission Rock). Should LARWQCB determine that modifying or reissuing the WDRs/WRRs is required, Limoneira must file an updated Report of Waste Discharge with LARWQCB for approval.

Staff submitted data requests to the applicant that would have provided information about the steps Limoneira has taken and would take in the future to comply with water quality regulations and serve recycled water to the project for operation. The applicant refused to respond to the requests stating that they do not control Limoneira and that it is Limoneira's responsibility to comply with the LARWQCB permitting process (CH2M2016c). Staff understands and acknowledges the applicant has no control over Limoneira's intent or schedule to complete permitting for industrial use of recycled water. However, without further information on if and how Limoneira can comply with the LARWQCB permitting process and whether they would be allowed to serve recycled water to the project, the availability and reliability of the water supply is uncertain. In addition, the applicant stated that no alternative sources of recycled are under consideration (CH2M2017b). Therefore, the project would have no back-up water supply for industrial uses in the event Limoneira cannot provide recycled water.

Staff is currently consulting with LARWQCB to discuss the permitting process for Limoneira to supply recycled water to Mission Rock, including what information would be required to evaluate the recycled water supply. Water quality data from the wastewater treatment process at Limoneira is available, which may be useful for LARWQCB to gauge the likelihood Mission Rock could use the recycled water. It is also unclear to staff the length of time needed for LARWQCB to complete the permitting process, if and when Limoneira would pursue filing the necessary information. Also, if Limoneira were permitted to supply recycled water to Mission Rock, it is possible there may be specific requirements for end users of the supply that the applicant could be required to meet. Staff is continuing to evaluate the availability and reliability of the proposed supply and will provide a final analysis in the Final Staff Assessment (FSA).

Staff concludes that Mission Rock's proposed use of recycled water for industrial purposes, instead of potable water, would not impact regional potable water supplies. (Given that the city of Santa Paula will not provide water to the proposed project, the city's water supplies would not be affected.) Staff stresses that no other water source was analyzed for this project, therefore **if Limoneira cannot provide recycled water then the proposed project has not demonstrated a reliable water supply is available.**

[18] LARWQCB Order No. R4-2014-0040. Waste Discharge Requirements / Water Recycling Requirements and Monitoring and Reporting Program for Limoneira Company – Limoneira Wastewater Treatment Plant.

Contingent on staff's evaluation of the availability and reliability of the recycled water supply, staff recommends Condition of Certification **SOIL&WATER-4** to ensure a long-term supply of recycled water to the project. Condition of Certification **SOIL&WATER-5** would ensure the quality and use of recycled water at Mission Rock meets regulatory requirements. This condition could also be revised to include any specific requirements LARWQCB may have for Mission Rock as an end-user of the recycled water. Condition of Certification **SOIL&WATER-5** would also require reporting the use of recycled water and potable water to ensure the project water use is within the limits analyzed by staff in this staff assessment.

Wastewater Management

Wastewater generated during operation would include sanitary waste, storm water runoff, and process wastewater. If wastewater is not properly disposed, then contamination could potentially occur to a nearby water body or groundwater could become contaminated through soil infiltration.

Sanitary wastewater from facility sinks, toilets, and showers will be disposed of to the onsite septic system, also referred to as an Onsite Wastewater Treatment System (OWTS). When the septic system requires service, the waste would be pumped and hauled to a municipal treatment works by a licensed OWTS contractor. The Ventura County Environmental Health Division Liquid Waste Program, operating under an interagency agreement with the Regional Board, enforces standards designed to ensure that dispersal of wastewater through OWTS is protective of human health, safety, and the environment. The Liquid Waste Program accomplishes this by carefully reviewing OWTS proposals and enforcing OWTS siting restrictions and treatment system design limitations, to ensure that onsite treatment of wastewater will not result in pollution of groundwater and surface water that can result in degradation of these vital resources (VCEHD2015). This includes designing the OWTS so as to avoid contact with floodwaters and to prevent sewage from backing up into the building during flooding. Staff recommends Condition of Certification **SOIL&WATER-6** to ensure the proper design, construction, and maintenance of the OWTS at Mission Rock meets regulatory requirements. With implementation of this condition of certification, impacts from sanitary wastewater would be avoided or reduced to **less than significant** during operation of the proposed project.

As discussed in "Soil Erosion and Surface Water Quality" above, Condition of Certification **SOIL&WATER-3** would require the project to comply with the local site design criteria for its post-construction storm water control BMPs. By developing and implementing design plans that describe what site design principles and techniques, source control measures, retention BMPs, biofiltration BMPs, and treatment control measures, would be used to meet the design requirements, Mission Rock would minimize impacts of storm water runoff. Impacts from storm water runoff would be avoided or reduced to **less than significant** during operation of the proposed project.

Industrial process wastewater would be discharged to the Patriot Wastewater facility (formerly operated by Southern California Waste Water Company). Wastewater would be collected in holding tanks or sumps and will be discharged into the existing industrial wastewater effluent pipeline in Shell Road, adjacent to the Mission Rock site. The AFC includes a letter from Patriot Wastewater that its facility has sufficient resources to

service Mission Rock for up to 135,000 gallons per day of cooling tower blowdown, reverse osmosis reject, and/or other processed wastewater discharged from the proposed project. By discharging to a permitted wastewater treatment facility, Mission Rock would minimize impacts of industrial process wastewater. However, staff notes that the proposed wastewater facility owned by Patriot Wastewater (located on 815 Mission Rock Road) is currently not accepting wastewater from customers. Their Conditional Use Permit is currently suspended, and the only activities allowed are under an emergency permit for clean-up following an explosion and fire in November 2014.

Patriot Wastewater seeks to resume wastewater treatment activities, as well as expand the site boundaries and make various operational changes. An application was submitted to Ventura County Planning Division on July 10, 2015 to modify the Conditional Use Permit. Subsequent resubmittals were filed January 23, 2017 and May 19, 2017 to indicate changes to the project description and provide additional information needed by the county to review the application. Each time, the resubmitted application was determined incomplete by the county and additional information was requested. The most recent resubmittal filed in September was deemed complete and Ventura County staff is currently in the process of making an environmental determination on the Patriot Wastewater project (VCPD2017). For now, it is unknown whether the applicant would be able to discharge to the Patriot Wastewater facility or if so, when it would be available for use. This puts into question the availability and reliability of the facility proposed for acceptance of industrial wastewater discharge. In addition, the applicant stated that no alternative methods or facilities are under consideration for the discharge of industrial wastewater (CH2M2016g). Therefore, the project would have no back-up method for industrial wastewater disposal in the event Patriot Wastewater cannot accept the project's discharge.

Although staff concludes that discharging to a permitted wastewater treatment facility would reduce impacts to less than significant, no other wastewater disposal method was analyzed for this project. Therefore, **if Patriot Wastewater cannot accept the project's discharge then the proposed project cannot demonstrate reliable wastewater disposal is available.** Staff plans to further coordinate with the Ventura County Planning Division to evaluate if and when the Patriot Wastewater facility could be approved for operation and if any special criteria would apply to the Mission Rock discharge as a result. Any new information would be incorporated into the Final Staff Assessment. Depending on information obtained from Ventura County, staff recommends a condition of certification such as **SOIL&WATER-7** which would require documentation from the applicant demonstrating the Patriot Facility is licensed to operate and receive the proposed wastewater discharge from Mission Rock. This condition would be revised based on new information that is obtained for the FSA.

Flooding

Flooding is an overflow of water onto land that is normally dry. Staff analyzed potential flooding of the project site that might occur from:

- construction that substantially alters the existing drainage patterns of the site (due to site grading, increasing impervious surfaces, or placing the project in a location that would alter the course of a stream or river);
- riverine flooding caused by rapid accumulation of storm water runoff in a watershed;

- failure of regional floodplain management (such as failure of a dam or levee); and
- tsunamis and seiches caused by geological events (see the **Geology and Paleontology** section of this staff assessment).

Staff notes CEQA's explicit distinction between significant effects of a project on the environment and significant effects of the environment on a project.[19] Of the four bullets listed above, the first bullet represents impacts to the environment caused by the project. Evaluation of these potential impacts is discussed in "Onsite and Offsite Flooding Impacts", below. Where a potential impact is identified, staff determined whether the proposed project would cause significant impacts to the public and/or upstream and downstream resources.

The last three bullets listed above are examples of impacts to the project caused by the environment, discussed below in "Flood Hazard Areas and Relative Risk". While CEQA only requires an agency to consider the impacts of the proposed project on the environment, commission staff also considers general impacts to grid reliability, which may entail assessing site-specific vulnerabilities. Impacts to reliability can potentially result from flooding due to river overtopping or failure of engineered structures designed to control flooding (e.g. dam, levee, and drainage ditches). Staff does not propose mitigation regarding these hazards in this impact analysis, but instead assesses the flood risks.

Relative flood risk was determined by estimating the likelihood of a flood impacting the proposed Mission Rock and evaluating the consequences resulting from those flood impacts. For purposes of this section, the likelihood of impacts is mainly based on hazard maps, and the consequences are evaluated with respect to the severity of flood impacts to safety of people onsite and electric grid reliability (local or system wide).[20]

Onsite Flooding Impacts

The applicant submitted a drainage study to assess the existing drainage patterns associated with pre-developed conditions and the proposed post-development drainage flows through the site (CAL2015a Appendix 5.15A). Currently, the 9.79-acre site has a gently sloping southerly existing grade that is paved with asphalt and concrete. The site is isolated from run-on flows from adjoining properties due to roadway curbs and fencing surrounding the entire property, so all storm water flow originates from on-site. Rainfall travels across the pavement as sheet flow and collects in two valley gutters which direct the storm water to the collection point in the south-west corner of the site. Here a storm drain releases the runoff water to an existing ditch that drains to the Santa Clara River.

Proposed construction of Mission Rock would permanently alter onsite drainage. Site preparation includes the complete removal of all existing pavement followed by the

[19] *California Building Industry Association v. Bay Area Air Quality Management District*, Case No. S213478 (Cal. Supreme Court, December 17, 2015)

[20] The **Power Plant Reliability** section of this staff assessment analyzes how the Mission Rock facility is designed, sited, and operated in order to ensure its safe and reliable operation.

addition of imported fill material to elevate the entire site. After construction of Mission Rock, portions of the site would be covered in crushed rock or similar porous material. Consequently, the post-construction site would be 37 percent impervious compared to the site's current condition of being 90 percent or greater impervious. Results of the applicant's drainage study are summarized in **Soil & Water Resources Table 3**. Hydrology calculations for pre- and post-construction storm water flows are based on pervious and impervious areas, time of concentration, soil type, and design storm. For post-construction conditions, both the peak flow and total volume of storm water would decrease by roughly 60 percent.

Soil & Water Resources Table 3

Drainage Calculations for 100-year, 24-hour Design Storm[1]

Mission Rock Site	Pre-construction	Post-construction
Total area (acres)	9.79	9.79
Percent impervious	90%	37%
Time of concentration (minutes)	6	17
Peak flow (cubic feet per second)	**42**	**15**
Total volume (acre-feet)	**7.21**	**3.06**

Source: CAL2015a Appendix 5.15A

[1] Per the VCWPD Hydrology Manual this site lies in VCWPD Zone 2 and Rainfall Zone K, which receives 10.6 inches of rainfall in the 100-year, 24-hour storm event.

Because post-construction conditions would decrease both the peak flow and total volume of storm water, Mission Rock would have **no impact** from onsite flooding.

However, despite this improvement of onsite drainage, the applicant's proposed storm water management system could require additional measures to comply with storm water quality requirements per Condition of Certification **SOIL&WATER-3** (see "Soil Erosion and Surface Water Quality" discussion above). Potentially, the site may require incorporation of BMPs and/or features that prevent or reduce pollutants in storm water runoff. Options include: 1) site design principles and techniques, 2) source control measures, 3) retention BMPs, 4) biofiltration BMPs, and 5) treatment control measures. (TGM2011). The final details of the design would be reviewed and approved prior to implementation to ensure the appropriate water quality protection elements are included.

Offsite Flooding Impacts

A project could potentially cause offsite flooding impacts by:

- allowing onsite storm water to flow offsite;
- accidentally releasing contamination or toxic substances during a flood event;
- changing the course or capacity of a stream or river; or
- exacerbating flood damage to offsite areas during a flood event.

As discussed above, the onsite storm water collection system would adequately manage and prevent storm water runoff from impacting adjacent properties.

The accidental release of contamination or toxic substances during a flood event is prevented or minimized by implementing a Hazardous Materials Management Program (discussed in the **Worker Safety & Fire Protection** section) and Operation Waste Management Plan (discussed in the **Waste Management** section). Handling of toxic and hazardous substances must follow strict management regulations, including secure storage with secondary containment. Hazardous waste must also be managed in accordance with regulations for onsite storage followed by proper offsite disposal based on the amounts collected and time of storage on site. Implementation of these and similar procedures would protect the environment and the safety of workers onsite during normal operating conditions. Should a flood event occur, these BMPs would reduce or limit the impact of a release to travel offsite and affect the public.

The location of the project site is not within the floodway or flow line of the Santa Clara River, Todd Barranca, or Cummings Road Drain. Construction of Mission Rock would not impact the course of a stream or river, making this impact not applicable to this project. However, the project site is located within a flood hazard area (see “Flooding Potential” discussion in the “Surface Water Features” subsection above), which could potentially exacerbate flood damage to offsite areas during a flood event. The placement of fill material in the flood hazard area can result in an increase in the BFE by reducing the ability to convey and store flood waters.

This can result in increased flood damage to both upstream and downstream properties (FEMA2001).

Ventura County established building performance standards for development within the 100-year floodplain to minimize the risk of potential loss of life and damage from the effects of flooding to buildings and the natural environment. In unincorporated Ventura County, development within a floodplain requires a Floodplain Development Permit that includes requirements from FEMA’s NFIP and the county’s Floodplain Management Ordinance. Property owners that wish to be removed from the FEMA’s floodplain designation by elevating the site with fill material must obtain the following approvals from FEMA:

- Conditional Letter of Map Revision Based on Fill (CLOMR-F): Prior to project construction, this letter states that a parcel of land or proposed structure that will be elevated by fill would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed.
- Letter of Map Revision Based on Fill (LOMR-F): After project construction, this letter states that an existing structure or parcel of land that has been elevated by fill would not be inundated by the base flood.

The applicant submitted to FEMA a request for a CLOMR-F in February 2017 (CH2M2017e). Included in the required supporting documentation, an engineering report demonstrated through hydrologic and hydraulic analyses that the proposed project would not result in any increase in flood levels within the community during the occurrence of the base flood discharge. The report anticipates future updates to FEMA hazard flood maps and considers the updated data used to develop the Preliminary

FIRM rather than the Effective FIRM.[21] For example, updated flow rates of the 1-percent annual chance flood on the Santa Clara River were significant, increasing by roughly 40 percent.[22] Staff notes that the report refines the pre-construction flood conditions with more accurate representation of physical characteristics (such as topography, flood control structures, ground conditions, land use, and study boundaries). As a result, the report's flood modeling produced larger areas of both the floodplain hazard zone and the floodway zone. Despite this discrepancy, which could be viewed as more conservative flooding hazards, the report concludes that Mission Rock would meet the requirements from FEMA's NFIP and the county's Floodplain Management Ordinance.

Soil & Water Resources Figure 4 presents modeling results labeled "Corrected Effective" from the applicant's report, with refined floodplain boundary delineated with solid green and the floodway boundary with dashed yellow. When compared to the Preliminary FIRM shown in **Soil & Water Resources Figure 3**, the applicant's modeled floodway is considerably larger than the Preliminary FIRM and the applicant's modeled base flood (the 1-percent annual chance flood) appears to be more similar to the 0.2-

percent annual chance flood shown in the Preliminary FIRM. Post-construction modeling runs were performed using the "Corrected Effective" conditions. Results found that proposed fill for Mission Rock would create minor increases in the 1-percent annual chance floodplain elevation with a maximum increase of 0.5 feet approximately 300 feet upstream of the project and a total sphere of influence (where there is any increase) approximately 4000 feet upstream of the project. Floodway elevations (i.e. Base Flood Elevation with Floodway) did not change, while the allowable surcharge decreased. Model results indicate that the proposed project would be compliant with both the Ventura County Floodplain Management Ordinance and FEMA NFIP regulations (CH2M2017e). **Soil & Water Resources Figure 5** shows the minimum elevations required for the Mission Rock site to be removed from the base flood hazard area.

On March 10, 2017 FEMA issued a CLOMR-F for the Mission Rock site (TN# 216565). However, FEMA issues these determinations for revisions only with respect to the Effective FIRMs. The CLOMR-F for Mission Rock indicates that the proposed site's lowest elevation would be 188.1 feet, which is above the (current) 1-percent annual chance flood elevation of 182.7 feet. When FEMA adopts an updated FIRM, a new CLOMR-F would be required (if Mission Rock has not been constructed) or a LOMR-F (if the AFC for Mission Rock is approved and the facility is constructed prior to release of the updated FIRM). Although the adoption date and finalized data of updated FIRMs is unknown, staff expects that the proposed Mission Rock site would meet the requirements of a CLOMR-F or LOMR-F because the site elevations are designed based on the updated flow rates used for the Preliminary FIRM. Staff recommends Condition of Certification **SOIL&WATER-8** requiring a new CLOMR-F and/or LOMR-F (where applicable) after an updated FIRM is adopted by FEMA.

[21] More information regarding Preliminary and Effective FIRMs are in the "Flooding Potential" discussion in the "Setting and Existing Conditions" subsection above.

[22] Where the Santa Clara River flows under the State Route 118 Bridge, located roughly three miles downstream from the project site, the flow rates used for the Effective and Preliminary FIRMs are 161,000 and 226,000 cubic-feet per second, respectively (CH2M2017e).

Because Mission Rock would not cause or exacerbate flooding to areas offsite and proper implementation of BMPs would reduce or limit the impact of a release to travel offsite, offsite flooding impacts due to construction or operation of Mission Rock are **less than significant**.

Flood Hazard Areas and Relative Risk

Relative flood risk was determined by estimating the likelihood of a flood impacting the proposed project and evaluating the consequences resulting from those flood impacts (see **Soil & Water Resources Table 4**). The likelihood of flood at the Mission Rock site varies depending on the type of hazard: flooding due to river overtopping or failure of engineered structures designed to control flooding (e.g. dam, levee, and drainage ditches). Flood hazards are evaluated based on authorized maps identified by the appropriate regulating agency. Consequences of site inundation, on the other hand, are very project specific and not dependent on the cause of the flood.

Soil & Water Resources Table 4
Risk Assessment

Risk = Consequence x Likelihood			
	Higher Likelihood Impacts	**Medium Likelihood Impacts**	**Lower Likelihood Impacts**
High Consequence	High Risk	High Risk	Medium Risk
Medium Consequence	High Risk	Medium Risk	Low Risk
Low Consequence	Medium Risk	Low Risk	Low Risk

Source: COCAT 2013

Staff evaluated the consequences with respect to the severity of flood impacts on the following:

- Safety of people onsite
- Local emergencies and evacuations
- Electric grid reliability (local and system wide)

Staff determined that the consequences to onsite workers would be low because the impact of accidental release of toxic and hazardous substances are reduced or limited with implementation of LORS and conditions of certification discussed in this staff assessment (see the **Worker Safety & Fire Protection** and **Waste Management** sections). If a flood event results in operational failure of the facility, its inability to generate electricity is not expected to hinder local emergency response activities or threaten community safety. The electric grid (both local and system wide) is designed with redundancies to account for unexpected short- and long-term outages of a facility. Therefore, staff believes that the overall consequences of flood damage are low.

Staff evaluates the likelihood of flood hazards based on FEMA FIRMs, where available. As described above, FEMA prepares FIRMs that show the 1-percent annual chance

floodplain boundaries based on a detailed study that includes a hydrologic analysis of the watershed to determine the probability that a discharge of a certain size will occur and a hydraulic analysis to determine the characteristics and depth of the flood that results from that discharge. The FIRMs also show floodplain boundaries for the 500-year flood, which is the flood having a 0.2-percent chance of occurrence in any given year. The regulated floodway is shown as the watercourse channel plus the portion of adjacent floodplain needed to convey the base or 1-percent annual chance flood event without increasing flood levels by more than one foot and without increasing velocities of flood water. For purposes of evaluating risk, staff considers areas within the regulated floodway to have a high likelihood of exposure to flood hazards.

Similarly, areas within the 1-percent annual chance floodplain have a medium likelihood and areas within the 0.2-percent annual chance floodplain have a low likelihood.[23]

- **Hazard – Riverine Flooding**

The Santa Clara River Watershed drains an area of approximately 1,626 square miles, making it one of the largest watersheds on the southern California coast. By the early 1900's, citrus had become the dominant crop of the region and agriculture began to intensify. Increased demand of ground and river water to irrigate agricultural lands resulted in the building of diversions throughout the Santa Clara River. During this period, over 16,000 acres were irrigated by the Santa Clara River. In addition, levees and small dams were built, which led to the altering of natural groundwater recharge and surface flow dynamics. In more recent years, irrigated crops have exceeded 100,000 acres, but population growth has increased conversion of agricultural land to urban uses (SWS2007).

Flows in the Santa Clara River can vary dramatically, often exhibiting very low flow in dry periods that increase exponentially during winter storm events. In the rainy season (November through March), river flows rapidly peak then subside depending on the intensity of rainfall events. At times, significant flows through the Santa Clara River have caused damage to homes, agricultural land, and other properties. **Soil & Water Resources Table 5** lists estimated peak flows during record flood events (SWS2007).

[23] This roughly follows Ventura County's threshold of significance criteria for FEMA hydraulic hazards (VCWPD2006).

Soil & Water Resources Table 5
Santa Clara River Peak Flows during Record Flood Events
(cubic-feet per second)

Date	Peak Flow[1]
March 12, 1928[2]	800,000
March 2, 1938	120,000
January 25,1969	165,000
February 25, 1969	152,000
January 10, 1995	110,000
January 10, 2005	136,000

Source: SWS2007
[1] Estimated flow at Montalvo, located 7.5 miles downstream of project site
[2] Estimated flow due to St. Francis Dam failure event

As shown in **Soil & Water Resources Figure 3**, a portion of the project site is currently in the 1-percent annual chance floodplain (labeled 2010 Effective FIRM) and the anticipated FIRM update (labeled Preliminary FIRM) shows the entire site within the base floodplain. Proposed placement of infill material to elevate the site is expected to remove Mission Rock from the base floodplain. Although this would change the likelihood of flood hazards at Mission Rock from medium to low, the properties surrounding the site would be within the base flood. For this reason, staff considers the likelihood of Santa Clara River floodwaters reaching the site would be between medium and low. Because the consequences of flood damage are low, from **Soil & Water Resources Table 4** staff concludes this flood **risk is low**.

Staff notes that this conclusion is somewhat conservative. The updated design flows applied by FEMA to develop the Preliminary FIRM (listed in **Soil & Water Resources Table 6**) correspond to extremely large historic flood events. For example, the design flow of 226,000 cubic-feet per second (cfs) from the 100-year event is roughly 30 percent larger than the peak flow of 165,000 cfs that occurred in January 1969 during the largest natural flood on record (see **Soil & Water Resources Table 5**).

Soil & Water Resources Table 6
Santa Clara River Design Flows (cubic-feet per second)

Return Period	At Sespe Creek[1]	At Montalvo[2]
20-year	108,600	111,000
50-year	168,200	172,000
100-year	221,000	226,000
200-year	279,700	286,000
500-year	364,800	373,000

Source: VCWPD2006
[1] Located approximately 10 miles upstream of project site
[2] Located approximately 7.5 miles downstream of project site

- **Hazard – Levee Failure**

Levees are designed to provide flood protection for a specific area. The two levee systems closest to the project site are located along Santa Paula Creek (SPC-1) and along the Santa Clara River (SCR-1), as shown on **Soil & Water Resources Figure 6**. Both levee systems were constructed by the U.S. Army Corps of Engineers designed to protect the indicated areas from flood hazards due to the 1-percent annual chance

flood. FEMA FIRMs show these protected areas as located outside the base floodplain only if the levee system meets specific design, operational, and maintenance criteria. Because neither SPC-1 nor SCR-1 was designed to protect the Mission Rock Community, staff concludes that the project has **no risk** of flooding due to levee failure.

- **Hazard – Dam Failure**

Ventura County is vulnerable to inundation from dam failure, with the most susceptible areas located along the Santa Clara River such as the City of Santa Paula. There are three major dams on the Santa Clara River located upstream from the City: the Santa Felicia Dam at Lake Piru, the Castaic Lake Dam, and the Pyramid Lake Dam. These water storage reservoirs are also designed to provide flood and debris control during storm events. To cause a catastrophic flood, dam failure would generally occur during extreme storm events that cause inflow to the basin above the emergency spillway freeboard capacity. They could also occur during seismic events that exceed the design limits of the dam foundation or structure. All three dams are subject to state regulations through the California Division of Safety of Dams, which inspects them annually to ensure that they are in good operating condition and requires detailed seismic studies and studies of potential flooding in the event of sudden or total dam failure. The agency that owns the dam prepares dam inundation maps that contain flood-wave arrival time estimates and flood inundation limits (URS 2005).

There is no record of failure of any dam located in Ventura County. However in 1928, failure of the St. Francis Dam located in the San Francisquitos Canyon in Los Angeles County resulted in catastrophic impacts in Ventura County. Constructed to store water from the Los Angeles-Owens River Aqueduct, the dam collapsed after it was completely filled for the first time. At the peak of the flood, the wall of water was reported to be 78 feet high. By the time it hit Santa Paula, 42 miles south of the dam, the water was estimated to be 25 feet deep. Nearly 500 people were killed, and damage estimates exceeded $20 million (AEC 2015b).

Today, the risk of any regional, state-regulated dam failing is considered extremely remote. Because dam inundation maps anticipate flooding throughout the entire city of Santa Paula and other parts of Ventura County, a Dam Failure Response Plan was developed. Disaster coordination and planning is the responsibility of the Sheriff's Department through its Office of Emergency Services, which maintains this plan and other hazard mitigation plans for the county (VCRMA 2013). Because the likelihood of dam failure is extremely low and the consequences of flood damage are low (Mission Rock is not a critical facility and its location would not exacerbate offsite impacts), staff concludes this flood **risk is low**.

Effects of Climate Change

The discussion in **Air Quality Appendix AQ-1** analyzes Mission Rock's potential impacts of burning natural gas and producing greenhouse gas emissions that would contribute cumulatively to climate change. Conversely, staff recognizes that current and future effects of global climate change could affect Mission Rock's facilities and operations. The following discussion considers the potential effects due to climate change during the project's 30-year operating life. Although CEQA does not require identification of significant effects of the environment (such as sea level rise) on a

project, all state agencies, including the Energy Commission, are required to take climate change into account in planning decisions.[24]

Climate Change – Riverine Flooding

Staff's assessment of future flooding is similar to evaluation of present-day flooding, namely, evaluating the consequences with respect to the severity of flood impacts on the following:

- safety of people onsite
- local emergencies and evacuations
- electric grid reliability (local and system wide)

The following discussions analyze how climate change may affect flooding potential at the proposed site. As with the analysis of present-day hazards (above), staff does not discuss mitigation but instead assesses the flood risks (see **Soil & Water Resources Table 4**). Specifically, staff determines the relative flood risk by determining the likelihood of a flood impacting the proposed Mission Rock site and evaluating the consequences resulting from those flood impacts.

Climate change is expected to increase the portion of precipitation falling as rain rather than snow in the mountain areas, which could have a significant impact on the timing and magnitude of runoff patterns. Although the 11-year running average of annual precipitation in California shows no clear indication of either an increasing or decreasing trend in precipitation between 1895 and 2013, the annual averages show large year-to-year variability. For example, the South Coast Region has an average annual precipitation of 17.38 inches, and one of the wettest winters (over 36 inches during 2005-2006 water year) was followed by the driest winter (5.5 inches during the 2007-2008 water year). Historic data also show periods of consecutive dry years, particularly since the 1970s (OEHHA 2013). While future changes in long-term average precipitation rates is difficult to predict, it is generally expected that extreme precipitation episodes such as atmospheric river storms[25] may become more extreme as the climate changes (DETT 2011). In effect, climate change may result in storm events that could flood larger areas for longer periods of time.

In addition, warmer temperatures and longer droughts are expected to contribute to more frequent and intense wildfires. The causes of fires are not necessarily climate-related, but hot, dry conditions can exacerbate ignitions from lightning, arson, and equipment use. An increase in the frequency and severity of wildfires reduces the availability of vegetation that absorbs runoff, which can result in increased runoff, erosion, and sedimentation.

[24] Governor Schwarzenegger's Executive Order S-13-08 (November 2008) and Governor Brown's Executive Order B-30-15 (April 2015)

[25] *Atmospheric River storms* are basically narrow intense bands of moist air that deliver moisture to a particular area for varying lengths of time. For example, the "Pineapple Express" moves warm, moist air from the tropics near Hawaii into California and produces intense rains over large areas.

Areas damaged by these wildfires would have a greater potential for flooding and could affect the magnitude and frequency of flood events (OEHHA 2013).

Larger, more powerful flood flows could potentially damage levees and cause significant flooding. While climate change is expected to result in larger flood events, the magnitude of this increase is difficult to estimate. Because the magnitude of future flood events is unknown, the likelihood of floodwaters reaching the Mission Rock site could be medium or high. Even if floodwaters were to reach the project, the consequences of flood damage are low. As shown on **Soil & Water Resources Table 4,** the future potential of flood **risk is low to medium**.

Climate Change – Water Supplies

Climate change will likely impact both water demand and water supply. Drought periods and a lower snowpack could trigger a drop in groundwater levels and a decrease in the amount of imported water available to the region, which would have major impacts on the water supply. In addition, higher temperatures will likely increase water demand. In order to cope with these added stresses on water supply and water demand, increased pumping of local aquifers would exacerbate the decrease in groundwater levels (LARWQCB2015).

Because Mission Rock would use recycled water for industrial purposes, facility operations would be more resilient to potential water supply shortages. During times of severe drought, many California local water suppliers impose various restrictions on potable water use. Recycled water use, on the other hand, is not typically subject to these restrictions because its production is much less affected by drought. Recycled water would be available to Mission Rock year round, including times of little rain. If a severe drought were to result in region-wide efforts to conserve water, production of recycled water could decrease but would not stop. Mission Rock would maintain a full tank of recycled water onsite, which would compensate for fluctuations in Limoneira's recycled water supply.

As shown on **Soil & Water Resources Table 4**, because the likelihood of future potable water supplies impacting Mission Rock is low and the consequences of the these impacts are also low, staff concludes that this **risk is low**.

Climate Change – Water Quality

Climate change has the potential to impact surface water quality which, in turn, could drastically alter hydrological and ecosystem processes in the region. Examples include: decreased stream flow, reduction of aquatic habitats, rise in surface water temperature, increased pollutant levels and sedimentation, and intensification of algae growth (LARWQCB2015).

Because Mission Rock would use recycled water for industrial purposes, water quality degradation of regional water bodies would not affect facility operations. LARWQB regulates the water quality of Limoneira's recycled water production, which must meet specific standards for tertiary treatment. Mission Rock's water supply is independent of regional water bodies; therefore staff concludes that changes to surface water quality would pose **no risk**.

INDIRECT IMPACTS

Indirect impacts are effects caused by the project and occurring later in time or farther removed in distance, but still reasonably foreseeable. Indirect impacts usually result from a chain of events caused by the project, intended or not.

Growth Inducing

Each new municipal facility constructed, such as a power plant, has the potential to promote population growth in the vicinity. The resulting population increase could strain existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The **Socioeconomics** section of this staff assessment discusses whether the project would induce substantial population growth. Socioeconomics staff concludes that the construction and operation workforces would not directly or indirectly induce substantial population growth as the non-local construction workers would seek lodging temporarily closer to the project site, then return to their residence during the weekends. Furthermore, after construction has completed, the operations workers are anticipated to be local and commute from Ventura County (see the **Socioeconomics** section for further discussion). Based on this information, the approval of Mission Rock would not indirectly result in a significant increase of water and wastewater utility customers.

Groundwater

Because Mission Rock proposes to use recycled water produced by Limoneira, intervenors claim that the project would result in an indirect impact on the Santa Paula Groundwater Basin. Currently, Limoneira uses their recycled water to irrigate their own alfalfa crops. Intervenors state that Mission Rock, if constructed, would divert the recycled water that would otherwise recharge the Santa Paula Groundwater Basin.[26]

While agricultural irrigation is known to contribute to groundwater recharge, the extent of its effect on the Santa Paula Groundwater Basin is uncertain. The latest annual report of the Santa Paula Groundwater Basin Technical Advisory Committee (TAC) identifies the following sources of groundwater recharge to the Santa Paula basin: percolation from the Santa Clara River, deep percolation of rainfall and irrigation water, underflow from Fillmore basin, and percolation from the city of Santa Paula's Water Recycling Facility. It further states, "The quantity and areal extent of deep percolation of rainfall and irrigation water may be limited by the presence of shallow clay soils in some parts of the basin; their occurrence and impact on underlying aquifers is currently being investigated by the TAC."

The estimated annual use of recycled water by Mission Rock would not cause Limoneira to exceed their pumping allotment. Limoneira is a member of Santa Paula Basin Pumpers Association (SPBPA), one of the parties for the Stipulated Judgment.[27] The judgment regulates pumping allotments of parties involved (Limoneira's annual

[26] Public comments: TN#212505 (July 29, 2016), TN#212496 (July 28, 2016)

[27] For more information about the Stipulated Judgment, see the "Groundwater" discussion in the "Settings and Existing Conditions" subsection above.

allotment is 3,611 acre-feet), but no formal basin management plan is currently in place. The Stipulated Judgment includes provisions for potential recharge of the groundwater basin, but Limoneira's use of recycled water for crop irrigation is not considered groundwater storage and would not affect the amount of pumping allocations.[28] Furthermore, the TAC's latest annual report (UWCD2016) indicates that Limoneira's seven-year average (2008-2014) of groundwater pumping is 2,168 acre-feet, which is less than their allotment of 3,611 AFY. Mission Rock's estimated annual use of recycled water is 67 AFY under maximum scenario of 2,500 hours of operation, with 10 AFY under a more realistic operating profile of 500 hours per year. With an unused pumping allotment of about 1,443 AFY, consumptive use of 10 to 67 AFY of recycled water that might otherwise recharge the basin would not have a significant effect on the current allowable use.

In summary, Mission Rock's proposed use of recycled water would not cause Limoneira to exceed their pumping allotment of the Santa Paula Groundwater Basin, nor would it affect the pumping rights to any other party subject to the adjudicated basin. For these reasons, staff concludes that the potential impact of Mission Rock on groundwater recharge is **less than significant**.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulations, Title 14, section 15130).

Surface Water and Groundwater Quality

As identified in the **Executive Summary** section of this staff assessment, 37 projects within six miles of the proposed Mission Rock project have been approved, are under review, or in construction (see **Executive Summary Table 1** and **Executive Summary Figure 1**). These projects as well as other projects located within the Santa Clara River watershed, including the Mission Rock project, have the potential to contribute to an increase of local soil erosion and storm water runoff. Without the use of storm water BMPs and erosion control BMPs, these changes could incrementally increase local soil erosion and storm water runoff leading to significant impacts to the quality of receiving water bodies. By complying with all applicable erosion and storm water management LORS, including the NPDES Construction General Permit, the proposed project would avoid or substantially lessen the cumulative problem[29]. Mission Rock's contribution would not be "cumulatively considerable" and, therefore, not significant.

[28] According to the Stipulated Judgment, storage for recharge would require approval of the TAC, must not adversely impact the water quality of the groundwater basin, and must not cause injury to any vested rights. Title is retained to water stored underground, and stored water (minus losses due to basin spill) may be pumped in addition to the approved pumping allocations. In other words, if a party recharged 1,000 AFY to the basin, they would be entitled to pump an additional 1,000 AFY above and beyond their stipulated allocation (PAULA2017).

[29] 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

Water Supply

CEQA requires an assessment of a proposed project's impacts on the local water supply system. Particularly, the California Water Code Sections 10910-10915 require development of a Water Supply Assessment (WSA) containing specific elements related to current and projected supplies and demands of the system's service area. Proposed projects meeting certain size and water usage criteria must have a WSA prepared during the CEQA process, which is typically prepared by the water purveyor.

Based on definitions detailed in the Water Code, staff believes that the proposed project does not meet the criteria to require a WSA for the following reasons:

- The project would occupy less than 40 acres. Because the Mission Rock site is 9.79 acres (CAL2015a §5.11.2.4); the project does not meet this criteria.
- The project would have less than 65,000 square feet of floor area. The proposed control building and garage/warehouse would occupy a total area of 4,480 square feet (CAL2015a §5.13.2.3); the project does not meet this criteria.
- The project would use less water than a 500 dwelling unit project. The city of Santa Paula's Urban Water Management Plan utilizes a residential demand rate of 0.4 acre-feet per dwelling unit (PAULA2017 Table 3-2), resulting in 200 acre-feet of potable water for a 500 dwelling unit project. Because Mission Rock would use recycled water for industrial uses, the estimated potable water use would be 0.15 acre-feet at maximum per year. Even if Mission Rock's use of recycled water were considered, its estimated annual use is 67 acre-feet under the maximum scenario of 2,500 hours of operation, or 10 acre-feet under a more realistic operating profile of 500 hours per year (CAL2015a §2.1.9.1). Therefore, in any case, the project would use less than 200 acre-feet and would not meet the criteria.

Staff also evaluated the potential impacts on the groundwater basin due to the project's use of recycled water from Limoneira (see the "Groundwater" discussion in the "Indirect Impacts" subsection above).

ENVIRONMENTAL JUSTICE

As discussed in the **Environmental Justice** section of this staff assessment, the minority population within a six-mile radius around the proposed project constitutes an environmental justice (EJ) population based on race and ethnicity (see **Environmental Justice Figure 1**). **Environmental Justice Figure 2** and **Table 3** show that the below-poverty-level population in Santa Paula Census County Division and the population receiving free or reduced price meals in the Rio Elementary School District and Somis Union School District constitute an EJ population based on low income.

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).)

Additionally, much of the land in the vicinity of the Mission Rock site has agricultural uses. Staff used the US Census Bureau's OnTheMap tool to estimate the number of agricultural jobs/farm workers within a six-mile and one-mile radius of the Mission Rock project site (see the discussion on "Agricultural Workers in the Project Area" in the **Environmental Justice** section of this staff assessment). There are an approximately 51 agricultural jobs/farm workers within a one mile radius of the project site concentrated north of the project site. There are approximately 4,398 agricultural jobs/farm workers within a six mile radius of the project site concentrated primarily northeast and south of the project site. In comparison there are 25,877 agricultural jobs/farm workers in Ventura County (USCensus2014).

Due to the presence of an EJ population among residents and farm workers, this analysis must identify whether the construction and operation of the proposed Mission Rock facility could have significant, unmitigated impacts or disproportionate impacts on an EJ population. The preceding subsections found the proposed project would not cause impacts to groundwater quality or potable water supplies, and impacts on surface water quality would be mitigated to less than significant. With respect to flood risks, staff's preliminary evaluation suggests that present-day flood risks are low and future flood risks could be between low and moderate. This section compares risks and impacts on the EJ populations with respect to the risks and impacts on the overall population within the vicinity of the project area.

IMPACTS ON WATER QUALITY

As discussed in the subsections above, Mission Rock would mitigate potential impacts to less than significant by implementing conditions of certification, which would ensure that LARWQCB's minimum water quality standards are met. Staff evaluated potential water quality impacts of Mission Rock's wastewater discharges on EJ communities, assuming compliance with all applicable LORS and conditions of certification. Mitigation measures could potentially be insufficient for EJ communities due to characteristics of the population such as:

- cumulative risks due to exposure from pollution sources in addition to the proposed project;
- unique exposure pathways and scenarios (e.g., subsistence fishers, farming communities); and
- presence of individuals who are physically sensitive or have limited resources (e.g., individuals with poor diets, limited or no access to healthcare).

Water quality

LARWQCB establishes water quality objectives (standards) of a water body based on its designated beneficial uses. When a water body does not meet one or more water quality standards for specific pollutant(s), it is placed on the 303(d) list and the development of a Total Maximum Daily Load (TMDL) is initiated for each pollutant, with the ultimate goal of reducing the pollutant entering the water body to meet water quality standards. Santa Clara River Reach 3 is on the 303(d) list as impaired for the following pollutants:

- Chloride – The two major point sources that discharge into Reach 3 are the Santa Paula and Fillmore wastewater treatment plants. While these two sources comprise approximately 80 percent of the total estimated load under low flow conditions, chloride loads and flows from upstream of Reach 3 are potentially significant during the critical low flow period and are estimated to comprise approximately 11 percent of total estimated loads. Although elevated concentrations of chloride can affect multiple beneficial uses designated for Reach 3, human health and aquatic life are not affected by current ambient conditions. Agricultural uses are most sensitive to chloride, by affecting chloride-sensitive crops.
- Total Dissolved Solids (TDS) – "Dissolved solids" refer to any minerals, salts, metals, cations, or anions dissolved in water. They can come from natural sources, such as minerals or silts, or as a result of human activities, such as wastewater discharges or urban and agricultural run-off. The TDS test is used as an indicator test for the general quality of the water. An elevated TDS concentration does not necessarily mean that the water is a health hazard, but it does mean the water may have aesthetic problems or cause nuisance problems. With respect to trace metals, elevated TDS may suggest that toxic metals may be present at an elevated level. Chemicals or other materials that contribute to total dissolved solids can be measured individually.
- Ammonia – The principal source of ammonia to Santa Clara River Reach 3 is effluent discharge from the Fillmore and Santa Paula wastewater treatment plants. Agricultural runoff, storm water discharge, and groundwater discharge may also contribute in relatively smaller amounts. One of the beneficial uses of Reach 3 designated in the Basin Plan is “migration of aquatic organisms”, and elevated levels of ammonia can cause aquatic life toxicity.
- Toxicity – Toxicity occurs when the effects of pollutants negatively impact one or more beneficial uses of a water body. The Basin Plan requires that all waters be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, terrestrial animals, and aquatic organisms. Tests for toxicity are used as an indicator test for the general quality of the water, by estimating the effects of discharges on the survival, growth and reproduction of test species. Results of testing can indicate the presence of undefined pollutants that may later be determined through a toxicity identification evaluation. As previously mentioned, Santa Clara River Reach 3 has ammonia levels that exceed the water quality standard. Excess amounts of ammonia cause aquatic life toxicity and are considered a toxic substance by LARWQCB.

Mission Rock would manage all of its wastewater discharges (industrial process wastewater, storm water runoff, and sanitary waste) to completely avoid or significantly minimize any contribution of these pollutants to the Santa Clara River. Industrial process wastewater would be conveyed directly to an offsite treatment facility. Storm water runoff would not come into contact with any sources of these pollutants, and potential trace amounts would be treated by biofiltration BMPs and/or other treatment control measures prior to its discharge to the Santa Clara River.

Mission Rock’s sanitary waste would perhaps have the greatest potential of discharging a pollutant, because onsite septic systems are recognized as a potentially significant source of nitrogen pollution (in the form of ammonium and nitrate). Ideally,

microorganisms would process this nitrogen for their metabolism and incorporate it into their biomass. However, ammonium and nitrate are able to reach groundwater due to the lack of proper site conditions. Ammonia, in particular, is more likely to form when the presence of saturated soil does not allow ammonium to convert to other forms of nitrogen and it enters the groundwater. This is typically addressed by requiring that septic systems include a minimum vertical separation between the bottom of a dispersal field and groundwater levels. Ventura County standards of septic systems require greater than five feet of vertical separation. Because the groundwater level at the Mission Rock site is at least 17 feet below ground surface and the site would be elevated at least five feet more during construction, the site would likely contribute very little, if any, ammonia to groundwater. Condition of Certification **SOIL&WATER-6** would require the applicant to comply with the requirements of Ventura County Building Code - Ordinance 4496 and the California Plumbing Code (CCR Title 24, Part 5), which govern the design and operation of septic systems to ensure no deleterious impact to groundwater or surface water.

Because Mission Rock wastewater discharges would not affect potable water supplies nor distinctly contribute to existing levels of chloride, TDS, ammonia, or toxicity, the project's mitigated water quality impacts would not disproportionately affect EJ populations.

FLOODING RISKS

Community flooding, regardless of its cause, can result in structural damage, property loss, exposure to contamination or toxic substances, and impacts to public health and safety. Low-income households are less likely to afford emergency preparedness materials, buy insurance policies, and obtain needed building improvements. Renters are also less likely to reinforce buildings and buy insurance because the decision to make major improvements and financial gains typically lies with the property owner. Emergency response crews may be unable to communicate with non-English speakers. The ability to remain safe or evacuate high-risk areas during a flood event is largely affected by factors such as quality of residential structures, access to transportation, availability of emergency supplies, effective service by emergency responders, and exposure to environmental hazards (CEC 2009).

Although multiple factors raise the vulnerability of EJ communities to a flood event and increase the likelihood of disproportionate impacts, the proposed project would not cause these communities to flood nor exacerbate flood impacts during a flood event. For this reason, the proposed project would not individually or cumulatively contribute to disproportionate flooding impacts to EJ populations.

COMPLIANCE WITH LORS AND STATE POLICIES

CLEAN WATER ACT

Staff has determined that the proposed project would satisfy the requirements of CWA Section 402 during construction activities, but not during operations. Complying with a NPDES Construction General Permit would regulate storm water discharges during construction of Mission Rock and its linear facilities. Compliance with two additional

NPDES permits would be required, if applicable, to specifically regulate wastewater discharge from hydrostatic testing and construction dewatering. Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2** would inform the CPM of appropriate BMP implementation and any issues regarding these permits.

During operations, the project would satisfy the requirements for CWA Section 402 for storm water discharges and sanitary wastewater, but not for industrial wastewater discharges. As described above[30], compliance with Condition of Certification **SOIL&WATER-3** would lessen the water quality impacts of storm water runoff by meeting the requirements of the Planning and Land Development Program per Ventura County's NPDES MS4 permit. For disposal of industrial wastewater, Mission Rock proposes to discharge this wastewater to the existing Patriot Wastewater treatment facility. By discharging to a permitted wastewater treatment facility, the project would minimize impacts of industrial process wastewater. However, Patriot Wastewater's conditional use permit is currently suspended and the facility cannot accept wastewater from customers. Until the applicant can demonstrate that the Patriot facility is licensed to operate and receive the proposed wastewater discharge from Mission Rock, the proposed project's compliance with this section of the Clean Water Act is **indeterminate**.

THE RESOURCE CONSERVATION AND RECOVERY ACT

The proposed project **would comply** with RCRA by preventing surface and groundwater contamination through proper identification, handling, and disposing of hazardous wastes. Condition of Certification **WORKER SAFETY-2** would require a Hazardous Materials Management Program that addresses hazardous materials onsite including handling, transportation, tracking, usage, and storage. Several conditions of certification in the **Waste Management** section of this staff assessment ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight.

CALIFORNIA CONSTITUTION, ARTICLE X, SECTION 2

The California Constitution, Article X, Section 2, requires that the water resources of the state be put to beneficial use to the fullest extent possible and prohibits the waste, unreasonable use, or unreasonable method of use, of water. The use of potable water for activities suitable for non-potable water use (e.g. construction, dust control, and industrial cooling) when a water source of lower quality is available is inconsistent with California Constitution, Article X, Section 2. The proposed project **would comply** with this law based on its use of recycled water from Limoneira. Mission Rock's use of recycled water for construction and industrial purposes would be consistent with Section 2 because it conserves higher quality water supplies for other beneficial uses.

However, if Limoneira ultimately cannot provide recycled water to the project, an alternative supply would need to be identified and new analysis would be required. To

[30] See the discussion of "Soil Erosion and Surface Water Quality" during Operations, under the subheading Assessment of Impacts.

ensure that the project uses recycled water from Limoneira, Condition of Certification **SOIL&WATER-4** would require the project owner to execute a long-term contract with Limoneira for the delivery of recycled water to the project. Condition of Certification **SOIL&WATER-5** would require documentation that demonstrates Limoneira's recycled water is permitted by LARWQCB for use at Mission Rock and the applicant can meet any requirements that may be specific to the terms of its use. This condition may be revised, replaced, or deleted depending on new information that could be included in the FSA.

CALIFORNIA WATER CODE

Section 13260

California Water Code (CWC) Section 13550 requires approval by the SWRCB and/or the appropriate RWQCB for any discharge that could affect the water quality of the state, which includes the Santa Clara River. Mission Rock proposes to discharge its industrial wastewater to the existing Patriot Wastewater treatment facility. By discharging to a permitted wastewater treatment facility, the project only need to meet the effluent requirements imposed by the treatment facility which would be regulated under Section 13260. However, Patriot Wastewater's conditional use permit is currently suspended and the facility cannot accept wastewater from customers. Until the applicant can demonstrate that the Patriot facility is licensed to operate and receive the proposed wastewater discharge from Mission Rock, the proposed project's compliance with CWC Section 13260 is **indeterminate**.

Section 13550

CWC Section 13550 requires the use of recycled water for nonpotable uses if recycled water is available. The proposed project would use recycled water from Limoneira for both construction and industrial purposes, which **would comply** with this law. However, if Limoneira ultimately cannot provide recycled water to the project, an alternative supply would need to be identified and new analysis would be required. To ensure that the project uses recycled water from Limoneira, Condition of Certification **SOIL&WATER-4** would require the project owner to execute a long-term contract with Limoneira for the delivery of recycled water to the project.

Sections 10910-10915

These sections of the California Water Code require an agency managing a public water system to prepare a water supply assessment (WSA) for certain defined development projects subject to CEQA. The proposed project does not meet the definition of "project" as defined in these sections of the Water Code, therefore a WSA **is not required** (see the "Water Supply" discussion in "Cumulative Impacts" subsection).

CALIFORNIA CODE OF REGULATIONS

Title 20, Sections 1301 – 1313

These data collection regulations known as Quarterly Fuel and Energy Reports (QFER) are to obtain necessary information in order for the California Energy Commission to

develop policy reports and analyses related to energy. Power plant owners are required to periodically report specific operational data to the California Energy Commission, including water supply and water discharge information. With Conditions of Certification **SOIL&WATER-5** and **SOIL&WATER-7**, the proposed project **would comply** with these sections of Title 20 by providing the required data. **SOIL&WATER-7** may be revised, replaced, or deleted depending on new information that could be included in the FSA. The final condition of certification would include a requirement for reporting on the volume of wastewater depending on the ultimate disposal method or facility.

Title 22, California Water Recycling Criteria

Title 22 sets standards for municipal wastewater reuse to protect public health and other water quality objectives. Under Title 22, disinfected tertiary recycled water is allowed for specific end uses, such as landscape irrigation, fire protection, and industrial process water. RWQCBs have permitting and ongoing oversight authority for these recycled water projects. The SWRCB plays a technical role in establishing recycled water criteria and reviewing recycled water proposals to ensure compliance with the criteria. Under Title 22, disinfected tertiary recycled water is allowed for specific end uses, such as landscape irrigation, fire protection, and industrial process water.

Mission Rock proposes to use recycled water from Limoneira for industrial processes, but the availability of this supply is uncertain. Although Limoneira is currently permitted by LARWQCB to produce disinfected tertiary recycled water, the permit only allows end use for irrigation of Limoneira's own alfalfa and hay crops. Any discharge of recycled water other than specifically described in Limoneira's permit is prohibited (including offsite use by a separate end-user for industrial purposes such as Mission Rock).

If LARWQCB determines that the permit must be modified or reissued, then the availability of recycled water to Mission Rock is contingent on Limoneira obtaining approval by LARWQCB. Condition of Certification **SOIL&WATER-5** would require documentation that demonstrates Limoneira's recycled water is permitted by LARWQCB for use at Mission Rock and the applicant can meet any requirements that may be specific to the terms of its use. However, the applicant stated that no alternative sources of water for industrial use are under consideration. Therefore, the project would have no back-up water supply in the event Limoneira cannot provide recycled water. Until the applicant can demonstrate that Limoneira is permitted to supply recycled water for industrial uses, Mission Rock's compliance with Title 22 is **indeterminate**.

Condition of Certification SOIL&WATER-5 may be revised, replaced, or deleted depending on new information that could be included in the FSA.

VENTURA COUNTY GENERAL PLAN

California law requires each local government to adopt a local general plan that reflects the goals and policies that guide the physical development of land within its jurisdiction. Ventura County's general plan includes specific policies to achieve established goals, which are organized by category topics. The policies below are relevant to soil and water resources.

Water Resources

Policy 1.3.2.1 requires a project to be consistent with the county's Water Management Plan. Although the Mission Rock Community is within the jurisdictional boundaries of Ventura County, it is within the city of Santa Paula's service area for potable water. Because the proposed project would use recycled water for non-potable uses, Mission Rock **would comply** with the general policy shared by both jurisdictions of maximizing water use efficiency and implementing recycled water where feasible.

Policy 1.3.2.2 requires a project to be consistent with all applicable county and state water regulations. As presented in **Soil & Water Resources Table 1**, Mission Rock would be consistent with most state and local LORS. The inconsistencies are related to the project's proposed method of industrial wastewater disposal and proposed supply of recycled water. Until the applicant can demonstrate that the Patriot facility is licensed to operate and receive the proposed wastewater discharge from Mission Rock and that Limoneira is permitted to supply recycled water for industrial uses, the proposed project's compliance with this policy is **indeterminate**.

Policy 1.3.2.3 requires that on-site septic systems meet all applicable county and state regulations. Through compliance with Condition of Certification **SOIL&WATER-6**, the proposed project **would comply** with LORS associated with on-site septic systems.

Policy 1.3.2.4 requires a project shall not significantly impact the quantity or quality of water resources within watersheds, groundwater recharge areas or groundwater basins. The proposed project would not impact groundwater recharge areas or groundwater basins. Impacts on the quantity of water resources would be less than significant through the use of recycled water for non-potable uses, with compliance with Condition of Certification **SOIL&WATER-5**. Environmental impacts on the quality of water resources would be mitigated to less than significant through compliance with Conditions of Certification **SOIL&WATER-1**, **-2**, **-3**, **-6**, and **-7**. However, Mission Rock's proposed supply of recycled water and proposed method of industrial wastewater disposal are currently uncertain. Due to the uncertainty regarding the project's recycled water supply and wastewater disposal, the proposed project's compliance with this policy is **indeterminate**.

Flood Hazards

Policies 2.10.2.2 – 2.10.2.4 seek to minimize the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from flood hazards. The construction of any structure in the floodplain must comply with the county Floodplain Management Ordinance and meet the requirements of a Floodplain Development Permit. Through the compliance of Condition of Certification **SOIL&WATER-8**, the proposed project **would comply** with these policies.

VENTURA COUNTY CODE

Ordinance 4142, Article 5, Sections 6950 and 6951

This ordinance, known as the Ventura County Stormwater Quality Management Ordinance, requires construction and development projects that meet applicability

criteria to control storm water runoff and pollution through the use of approved construction and post-construction BMPs. This ordinance gives Ventura County legal authority to require projects within its jurisdiction to comply with the LARWQCB NPDES Permit Order 2010-0108 for Phase I municipal separate storm sewer system (MS4 permit). As discussed below, sections of this ordinance ensure compliance with two essential elements of the MS4 permit.

Section 6950 - Construction

Section 6950 requires that applicable construction activities comply with the Development Construction Program per the MS4 permit to reduce pollutants in storm water runoff from construction sites. Although this requirement is the functional equivalent of compliance with the Construction General Permit (see Clean Water Act above), the MS4 permit directs the county to include additional requirements such as a minimum set of BMPs implemented on each site (based on project size), enhanced BMPs for "high risk sites", and county approval of a "Local SWPPP" prior to issuance of a grading or construction permit. The Local SWPPP must include appropriate site-specific construction site BMPs, specific locations, maintenance schedules, and the rationale used for selecting or rejecting BMPs. The county indicates that the General Construction Permit SWPPP may be used as the Local SWPPP as long as it meets the same requirements and is modified with the required Local SWPPP approval and signatory information. Through compliance with Condition of Certification **SOIL&WATER-3**, the proposed project **would comply** with Section 6950 of the ordinance by meeting requirements of the MS4 permit.

Section 6951 - Development

Section 6951 requires that applicable projects comply with the Planning and Land Development Program per the MS4 permit to lessen the water quality impacts of development. As described above[31], requirements to meet the performance criteria of the MS4 permit could include post-construction storm water control BMPs, hydromodification control measures, and a legally enforceable Maintenance Plan. The county's 2011 Technical Guidance Manual (TGM) provides guidance for implementation of storm water management control measures in order to meet performance criteria of the MS4 permit (TGM 2011).

Ventura County incorporated Planning and Land Development requirements into the county's review process for land use permits, directing developers to obtain county approval of specific elements prior to certain milestones. For example, proposed post-construction storm water measures must be reviewed and approved by the county prior to issuance of a county building permit. Subsequently, the approved post-construction measures become conditions of the building permit. Upon completion of construction, the county must inspect the development site to ensure proper installation of approved post-construction measures prior to the issuance of occupancy certificates. Project owners are also required to enter into a Covenant for Maintenance with the county,

[31] See the discussion of "Soil Erosion and Surface Water Quality" during Operations, under the subheading Assessment of Impacts.

which is a legally enforceable agreement accepting the responsibility for adequate future maintenance of all installed storm water BMPs.

Condition of Certification **SOIL&WATER-3** would ensure that requirements of the county's Planning and Land Development Program are met. While the Energy Commission has exclusive authority and its certification of a facility is in lieu of local, regional, and state permits, staff recognizes the complexity of the MS4 permit and the county's expertise in its implementation. As a result, **SOIL&WATER-3** is structured to include Ventura County in the review and enforcement of MS4 permit requirements. Although staff proposes coordination with Ventura County to implement the various requirements of the MS4 permit through **SOIL&WATER-3**, the CPM would have the authority to grant final approval of submittals. Through compliance with **SOIL&WATER-3**, the proposed project **would comply** with Section 6951 of the ordinance by meeting requirements of the MS4 permit.

Ordinance 3841 and amendments

This ordinance, known as the Ventura County Flood Plain Management Ordinance, regulates development in floodplains. One of its goals is to control the alteration of natural floodplain, stream channels, and natural protective barriers which help accommodate or channel flood water. Land development, such as grading and filling, could unnaturally divert flood waters and increase flood hazards in other areas. Because Mission Rock proposes to remove the project site from FEMA's floodplain designation, a LOMR-F must be obtained from FEMA. This process includes submitting to FEMA an engineering report and verification[32] from local floodplain regulators that the project meets all local floodplain management requirements. Through compliance with Condition of Certification **SOIL&WATER-8**, the proposed project **would comply** with this ordinance.

VENTURA COUNTY BUILDING CODE

Grading Requirements, Article 4, Appendix J

Through its grading ordinance, the county of Ventura requires that construction projects control erosion and prevent sedimentation and construction related pollutants from being carried offsite by storm water. The ordinance also requires construction sites to prevent non-storm water discharges.

The proposed project **would comply** with this code section through the implementation of Condition of Certification **SOIL&WATER-1**. This condition would require the project owner to develop a SWPPP, with the specific purpose of minimizing offsite erosion and sedimentation, and minimizing non-storm water discharges.

[32] The "Community Acknowledgment Form" must be completed and signed by the official responsible for floodplain management in the community. When the applicant submitted to FEMA a request for a CLOMR-F in February 2017, the Community Acknowledgment Form was complete and signed by Jeff Pratt as Ventura County's Floodplain Administrator.

Private Sewage Disposal Requirements, Article 7, Appendix H

The Ventura County building code describes the local requirements for septic waste systems. The requirements include descriptions of the necessary size of disposal tanks, appropriate quality of soil for disposal, appropriate distance between leach line and groundwater, and other important design considerations. The proposed project **would comply** with this section of Ventura County building code with Condition of Certification **SOIL&WATER-6**, which would ensure that the project's disposal system meets the requirements.

STATE WATER POLICIES: SWRCB RESOLUTION 75-58, WARREN-ALQUIST ACT, 2003 IEPR WATER POLICY

The California Energy Commission stated in its 2003 Integrated Energy Policy Report its responsibility to apply state water policy to minimize the use of fresh water, promote alternative cooling technologies, and minimize or avoid degradation of the quality of the state's water resources. Consistent with SWRCB 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy that (1) limits the use of fresh water for power plant cooling unless alternatives are environmentally undesirable or economically unsound, and (2) requires zero liquid discharge (ZLD) for wastewater unless shown to be environmentally undesirable or economically unsound.

Alternatives to Fresh Water

Mission Rock's proposed use of recycled water from the Limoneira Company for industrial purposes **would comply** with State policy to minimize the use of fresh water. However, the availability of recycled water from Limoneira to Mission Rock is contingent on approval by LARWQCB.

There may also be other alternative water supplies available for project operation that would satisfy the water policy requirements. Given the limited water volume needed for project operation, the project owner could truck or pipe in other raw, degraded, or other recycled water supplies for project operation. The applicant has not identified these or any other backup or alternative supplies.

The project is in the water service area of the city of Santa Paula. As discussed above,[33] the city of Santa Paula is opposed to the project and has refused to provide either a potable or recycled water supply. If the potable water supply were available, it is possible that its use could be in compliance with the water policies if a water supply conservation program offsetting freshwater were proposed. The city's supply of recycled water is currently not available to any of the city's customers due to chlorides concentrations that exceed the facility's permitted water quality discharge limits. Even if the city's recycled water met water quality standards, a pipeline is not in place to provide recycled water to the project site. A pipeline similar to that proposed by the applicant would be needed for delivery.

[33] See the discussion of "Water Supply and Use" during Operations, under the subheading Assessment of Impacts.

Since the proposed supply, if deliverable, would comply with the policies, staff has not conducted any further analysis of alternative supplies for this PSA. If the proposed supply is not permitted for delivery to the project, then additional analysis of an alternative supply would be necessary in the FSA.

ZLD Feasibility

The Energy Commission encourages power plant developers to incorporate ZLD facilities into their power plant designs as a way of reducing discharges and maintaining the quality of state waters. The use of a ZLD for Mission Rock would be infeasible, however, because the project would not produce enough wastewater to make it economically feasible. Typically, ZLD is feasible where a combined cycle power plant uses wet cooling for cooling of the steam cycle and large volumes of wastewater must be treated to produce a solid waste for disposal. ZLD is feasible in these cases because of the economy of scale, and it eliminates potentially significant environmental impacts that may result from other wastewater treatment methods such as evaporation ponds and deep well injection. Mission Rock would be a simple cycle facility that does not have a steam cycle requiring cooling, but it would use water for the wet surface air condenser (or "wet SAC") of the gas turbine inlet air chiller package. The inlet air cooling system produces a "blowdown" or wastewater stream that must be disposed of. The volume of wastewater from the project's wet SAC would be significantly less than from a conventional wet cooling system of a combined cycled power plant, and can be managed along with other water treatment wastewater. As discussed above, wastewater discharged in accordance with a LARWQCB permit would mitigate potential impacts. It would be too costly to add a ZLD system to process wastewater from this project given the rather small rate of discharge that is less than 10 afy. Because it would be unreasonable to require the use of a ZLD system, the project **would comply** with this policy.

CONCLUSIONS

Staff's conclusions based on analysis of the information are as follows:

1. Conditions of Certification **SOIL&WATER-1** and **-3** would reduce or avoid impacts of soil erosion and storm water runoff to surface water and groundwater quality during construction. Condition of Certification **SOIL&WATER-2** would protect water quality from the specific discharges of hydrostatic test water and construction dewatering.

2. Post-construction BMPs to control storm water would reduce soil erosion impacts during operations to less than significant by compliance with Condition of Certification **SOIL&WATER-3**.

3. Potential impacts of Mission Rock's wastewater streams would be mitigated to less than significant during construction through compliance with Condition of Certification **SOIL&WATER-2** (to manage hydrostatic testing and/or construction dewatering) and during operations with Conditions of Certification **SOIL&WATER-3** (to manage storm water runoff), **-6** (to manage sanitary waste), and **-7** (to manage industrial process wastewater).

4. The Patriot Wastewater facility, proposed to manage industrial process wastewater from Mission Rock, is not currently permitted to accept wastewater from customers. Staff plans to further coordinate with the Ventura County Planning Division to evaluate if and when the Patriot Wastewater facility could be approved for operation. Condition of Certification **SOIL&WATER-7** requires documentation from the applicant demonstrating the Patriot Facility is licensed to operate and receive the proposed wastewater discharge from Mission Rock. This condition would be revised based on any new information that is obtained for the Final Staff Assessment. Staff stresses that no other wastewater disposal method was analyzed for this project. If Patriot Wastewater cannot accept the project's discharge, then another wastewater disposal method would need to be identified and a new staff analysis would be required.

5. Because Mission Rock would use recycled water, per Conditions of Certification **SOIL&WATER-4** and **-5**, the project would have less than significant impacts to supplies of groundwater and surface waters. Furthermore, the proposed project does not require a Water Supply Assessment (WSA) because it is not a "Project" as defined by California Water Code Section 10912.

6. The availability of recycled water from Limoneira to Mission Rock is contingent on approval by LARWQCB allowing Limoneira to provide its recycled water and/or Mission Rock to accept this recycled water. Staff is currently consulting with LARWQCB to gauge the likelihood that Mission Rock could use the recycled water and will provide a final analysis in the Final Staff Assessment. Staff stresses that no other water source was analyzed for this project. If Limoneira cannot provide recycled water then another water supply would need to be identified and a new staff analysis would be required.

7. The project would not cause or exacerbate flooding to areas offsite. Condition of Certification **SOIL&WATER-3** would reduce potential impacts of flooding offsite areas due to onsite storm water runoff. Condition of Certification **SOIL&WATER-8** would ensure that elevation of the project site would not divert floodwaters nor increase flood hazards in other areas. Offsite flooding impacts due Mission Rock are less than significant.

8. The overall consequences of flood damage are low, because the sudden shutdown of Mission Rock due to a large flood would not adversely affect the safety of people onsite, impede local emergency services, nor significantly impact electric grid reliability. Therefore, the flood risk is low for scenarios where the probability of onsite flooding is low (specifically riverine flooding, levee failure, and dam failure).

9. The future effects of climate change could potentially result in: storm events that could flood larger areas for longer periods of time; longer droughts that could decrease water supply and increase water demand; reduce stream flow and increase water surface temperature of the Santa Clara River that could drastically alter its water quality. Because Mission Rock would use recycled water, potential risks due to drought or changes to the Santa Clara River are low. Due to the project site's proximity to the present-day floodplain, the future potential of flood risk is low to medium.

10. Mission Rock would not result in the indirect impact of inducing population growth in the vicinity nor of reducing groundwater recharge through its use of recycled water from Limoneira. Mission Rock's incremental effects on regional water supply or the quality of surface water and groundwater would not be cumulatively considerable.

11. Staff has not identified any significant soil or water resources impact resulting from the proposed project to the EJ population. No EJ populations would be significantly, adversely, or disproportionately impacted.

12. Due to the uncertainty regarding the project's recycled water supply and wastewater disposal, the proposed project's compliance with certain federal, state, and local LORS is **indeterminate**. However, if Limoneira can provide recycled water and Patriot Wastewater can accept industrial process wastewater; Mission Rock would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

PROPOSED CONDITIONS OF CERTIFICATION

CONSTRUCTION - NPDES GENERAL PERMIT

SOIL&WATER-1: The project owner shall manage storm water pollution from project construction activities by fulfilling the requirements contained in State Water Resources Control Board's *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002)* and all subsequent revisions and amendments. The project owner shall develop and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for the construction of the project.

Verification: At least thirty (30) days prior to site mobilization, the project owner shall submit the construction SWPPP to the CPM and a copy of the approved SWPPP shall be kept accessible onsite at all times. Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the State Water Resources Control Board or the Regional Water Quality Control Board about the general NPDES permit for discharge of storm water associated with this activity. This information shall include the notice of intent, the notice of termination, and any updates to the construction SWPPP.

CONSTRUCTION - NPDES WASTEWATER DISCHARGES

SOIL&WATER-2: If construction activities produce wastewater from hydrostatic testing and/or construction dewatering, the project owner shall fulfill the requirements contained in the following NPDES permits adopted by LARWQCB (and all subsequent revisions and amendments) that specifically regulate discharges of hydrostatic test waters and construction dewatering, as applicable: NPDES Permit No. CAG674001: *Discharges of Low Threat Hydrostatic Test Water to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* and NPDES Permit No. CAG994004*: Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties*.

Verification: The project owner shall submit to the CPM copies of all relevant correspondence between the project owner and the SWRCB or LARWQCB regarding the above NPDES permits within ten (10) days of its receipt or submittal. This information shall include copies of the Notice of Intent and Notice of Termination for the

project. A letter from the SWRCB or LARWQCB indicating that there is no requirement for the wastewater discharge of hydrostatic testing or construction dewatering would satisfy the corresponding portion of this condition.

STORMWATER QUALITY MANAGEMENT

SOIL&WATER-3: The project owner shall comply with the Ventura County Stormwater Quality Management Ordinance 4142 to meet the requirements of the county's Development Construction Program and Planning and Land Development Program, as described in LARWQCB NPDES Permit Order 2010-0108 (and all subsequent revisions and amendments) for Phase I municipal separate storm sewer system (MS4 permit). It is the Commission's intent that these requirements be enforceable by both the Commission and Ventura County. In furtherance of that objective, the Commission hereby delegates the enforcement of these requirements, and associated monitoring, inspection and fee collection authority, to Ventura County. Accordingly, the Commission and Ventura County shall confer with each other and coordinate, as needed, in enforcement of the requirements. The project owner shall notify the CPM in writing of any reported non-compliance with the county requirements, including documentation of any measures taken to correct the non-compliance, and the results of those corrective measures.

The project owner shall meet the county's Development Construction requirements contained in Part 4, Section F of the MS4 permit. Prior to construction, the project owner shall develop and submit a Local Storm Water Pollution Prevention Plan (Local SWPPP) for construction activities to Ventura County for review and the CPM for review and approval.

The project owner shall meet the county's Planning and Land Development requirements contained in Part 4, Section E of the MS4 permit. The project owner shall follow the county's Technical Guidance Manual for Stormwater Quality Control Measures (TGM) requirements for the selection and implementation of appropriate post-construction storm water BMPs. Prior to construction, the project owner shall provide to Ventura County for review, and the CPM for review and approval, the design plans for post-construction storm water BMPs and all information required to evaluate project compliance with the MS4 permit including, but not limited to: sizing calculations, hydrologic analysis, and if applicable hydromodification control measures.

Prior to start of operations, the project owner shall schedule a site inspection in order to obtain CPM approval that post-construction measures are properly installed. The project owner shall develop a maintenance plan, per the TGM, and submit it to Ventura County for review and the CPM for review and approval. The project owner shall accept responsibility for adequate future maintenance of all installed storm water BMPs by entering into a Covenant for

Maintenance with Ventura County. For the life of the project, the project owner shall meet the county's reporting requirements of post-construction BMPs and provide to the CPM a copy of submittals in the annual compliance report.

Verification: At least 180 days prior to site mobilization, the project owner shall submit the appropriate fee and required documentation, including design plans, to Ventura County for review and comment to ensure that the project complies with County Ordinance 4142 Section 6951 for post-construction storm water BMPs and a copy to the CPM. At least 60 days prior to Mission Rock construction activities, the project owner shall submit a Local SWPPP for construction activities and appropriate fee to Ventura County for review and comment to ensure that the project complies with County Ordinance 4142 Section 6950 and a copy to the CPM. At least 30 days prior to construction, the project owner shall submit to the CPM for approval, verification by Ventura County that: (1) pursuant to Section 6950, the project's Local SWPPP meets the county's Construction Development requirements of the MS4 permit; and (2) pursuant to Section 6951, the project's post-construction storm water BMPs meet the county's Planning and Land Development requirements of the MS4 permit. At least 30 days prior to start of operations, the project owner shall submit to the CPM for approval, verification by Ventura County that the following meet the county's requirements of the MS4 permit: (1) proper installation of post-construction storm water BMPs at the project site, (2) a maintenance plan per the TGM, and (3) a Covenant for Maintenance with Ventura County.

Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM all copies of any relevant correspondence between the project owner and Ventura County regarding storm water management requirements or issues, and fully explain the situation and corrective actions taken in the next monthly or annual compliance report, as applicable. For the life of the project, the project owner shall meet the county's reporting requirements regarding post-construction BMPs, including annual reports and applicable fees to Ventura County, and provide a copy of submittals to the CPM in the annual compliance report.

RECYCLED WATER PURCHASE AGREEMENT
(MAY BE REVISED, REPLACED, OR DELETED BASED ON NEW INFORMATION PRESENTED IN THE FSA)

SOIL&WATER-4: The project's supply of recycled water shall be tertiary-treated water from Limoneira Company and shall comply with California Water Code section 13523 and California Code of Regulations, Title 22 and Title 17, Division1, Chapter 5. The project owner shall provide the CPM a copy of the executed Recycled Water Purchase Agreement (agreement) with the Limoneira Company for a long-term supply (20 – 25 years) of tertiary treated recycled water for the project. The project shall not begin commercial operations without the recycled water final agreement.

Verification: At least thirty (30) days prior to the connection to the Limoneira Company recycled water pipeline, the project owner shall submit a copy of the executed agreement for the long-term supply of tertiary treated recycled water to Mission Rock.

The agreement shall specify all terms and costs for the use of recycled water by the project. At least thirty (30) days prior to commercial operation of Mission Rock, the project owner shall submit to the CPM documentation from Limoneira Company that all connections and systems designed for recycled water conveyance meet Limoneira Company requirements. The project owner shall submit any notice of a regulatory

inspection and/or violations related to the recycled water from the California Department of Health, Los Angeles Regional Water Quality Control Board, Ventura County, or Limoneira Company to the CPM within ten (10) days of receipt, and fully explain the corrective actions taken in the next monthly compliance report or annual compliance report.

WATER USE AND REPORTING

SOIL&WATER-5: The project owner shall record daily water use for the project's construction and operation. The project owner shall comply with the water use limits and reporting requirements described below. If water use is forecasted to exceed the maximum annual use, the project owner shall notify the CPM and develop a plan to address exceedances.

Potable water shall not be used for any activity that is suitable for recycled water use, including but not limited to: dust suppression, soil compaction, industrial service water, chiller fill and makeup, landscaping, and fire protection. The project's supply of recycled water shall be tertiary-treated water from Limoneira Company. The project shall not receive or use any recycled water from Limoneira without documentation from LARWQCB allowing its proposed uses.

During construction, total recycled water use for these purposes shall not exceed 10 acre-feet per year. The monthly compliance report shall include a monthly summary of daily water use for recycled water and potable water. After construction is complete, the project owner shall submit to the CPM, for review and approval, the source and means of delivery of potable water for use during operations.

For the life of the project, the project's total recycled water use shall not exceed 67 acre-feet per year and potable water use shall not exceed 0.20 acre-feet per year. The annual compliance report shall include a monthly summary of daily water use, differentiating between recycled water and potable water, and identifying the source of both water supplies.

Verification: At least thirty (30) days prior to receiving or using any recycled water from Limoneira, the project owner shall provide documentation to the CPM verifying that LARWQCB approval of the proposed end use(s). At least thirty (30) days prior to operations, the project owner shall submit to the CPM, for review and approval, the source and means of delivery of potable water for use during operations.

During project construction, the monthly compliance report shall include a monthly summary of daily water use for recycled water and potable water. After construction is complete, the project's annual compliance report shall include a monthly summary of

daily water use, differentiating between operational and domestic use and identifying the source of both water supplies.

The project owner shall notify the CPM within fourteen (14) days upon forecast to exceed the maximum annual water use as described above. Prior to exceeding the maximum use, the owner shall provide a plan to address exceedances.

PRIVATE SEWAGE DISPOSAL REQUIREMENTS

SOIL&WATER-6: The project owner shall comply with the requirements of Ventura County Building Code - Ordinance 4496 and the California Plumbing Code (CCR Title 24, Part 5), in the design of the project's septic disposal system. The septic system and leach fields shall be designed, operated, and maintained in a manner that ensures no deleterious impact to groundwater or surface water. Compliance shall include an engineering report on the septic system and leach field design, operation, maintenance, and loading impact to groundwater.

Verification: The project owner shall submit the appropriate fee and required documentation to Ventura County for review and comment to ensure that the project has complied with county sanitary waste disposal facilities requirements including: soil percolation standards; minimum separation/set back distances to prevent impacts to groundwater and nearby water wells; and septic tank and leach field design, sizing and construction standards to ensure adequate capacity and proper treatment and disposal of the wastewaters. Written assessments prepared by Ventura County regarding the project's compliance with these requirements must be submitted to the CPM for review and approval at least thirty (30) days prior to use of the septic systems.

OPERATION – WASTE WATER DISPOSAL AND REPORTING (MAY BE REVISED, REPLACED, OR DELETED IN THE FSA, BASED ON NEW INFORMATION)

SOIL&WATER-7: The project owner shall limit industrial process wastewater discharges to a maximum of 135,000 gallons per day to Patriot Environmental Services (Patriot). The project owner shall demonstrate compliance with discharge requirements stipulated by Patriot. 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: At least sixty (60) days prior to commercial operation, the project owner shall submit to the CPM relevant information and data required to meet the discharge requirements stipulated by Patriot. During operations, the project owner shall submit any water quality monitoring required by Patriot to the CPM in the annual compliance report. The project owner shall submit any notice of violations from Patriot to the CPM within ten (10) days of receipt and fully explain the corrective actions taken in the next 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.

CONSTRUCTION – FEMA LETTER OF MAP REVISION

SOIL&WATER-8: In accordance with the Ventura County Floodplain Management Ordinance and 44 CFR 65.12, the project owner shall prepare all necessary engineering plans and documents to support a request to FEMA for a Conditional Letter of Map Revision Based on Fill (CLOMR-F) or Letter of Map Revision Based on Fill (LOMR-F), as applicable. The project owner shall pay all applicable review fees and use FEMA's Guidelines and Specifications for Mapping Partners for guidance. The project owner shall complete the necessary FEMA MT-2 application forms package and the submittal shall be certified by a California-licensed professional engineer. The project owner shall address all FEMA review comments as needed to receive an approved CLOMR-F or LOMR-F.

The project shall not commence construction until the CPM receives documentation of a FEMA-approved CLOMR-F. The project owner shall address all "conditions" included in the CLOMR-F during project construction. If prior to construction, FEMA adopts an updated Federal Insurance Rate Map (FIRM) that supersedes the 2010 effective FIRM, the project owner shall request and obtain a new FEMA-approved CLOMR-F.

Following construction, the project owner shall conduct an As-Built survey of the completed construction, update the Proposed Conditions Model to reflect the As-Built Conditions, and delineate the resulting flood hazards. The project owner shall notify FEMA of the changes in accordance with 44 CFR 65.3, and request and obtain a FEMA-approved LOMR-F. The project owner shall provide to the CPM documentation of the FEMA-approved LOMR-F.

Verification: At lease thirty (30) days prior to construction, the project owner shall provide a copy of the CLOMR-F to the CPM for verification. No more than 180 days after construction is complete, the project owner shall complete and submit all necessary information and fees to FEMA to obtain an approved LOMR-F. During the FEMA review process for CLOMR-F or LOMR-F, the project owner shall submit to the CPM within ten (10) days of its mailing or receipt all copies of any relevant correspondence between the project owner and FEMA. This information shall include, but is not limited to, the necessary FEMA MT-2 application forms package and the submittal, FEMA's review comments, supplemental information provided to FEMA, and to the approved CLOMR-F or LOMR-F.

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SOIL & WATER RESOURCES - FIGURE 1

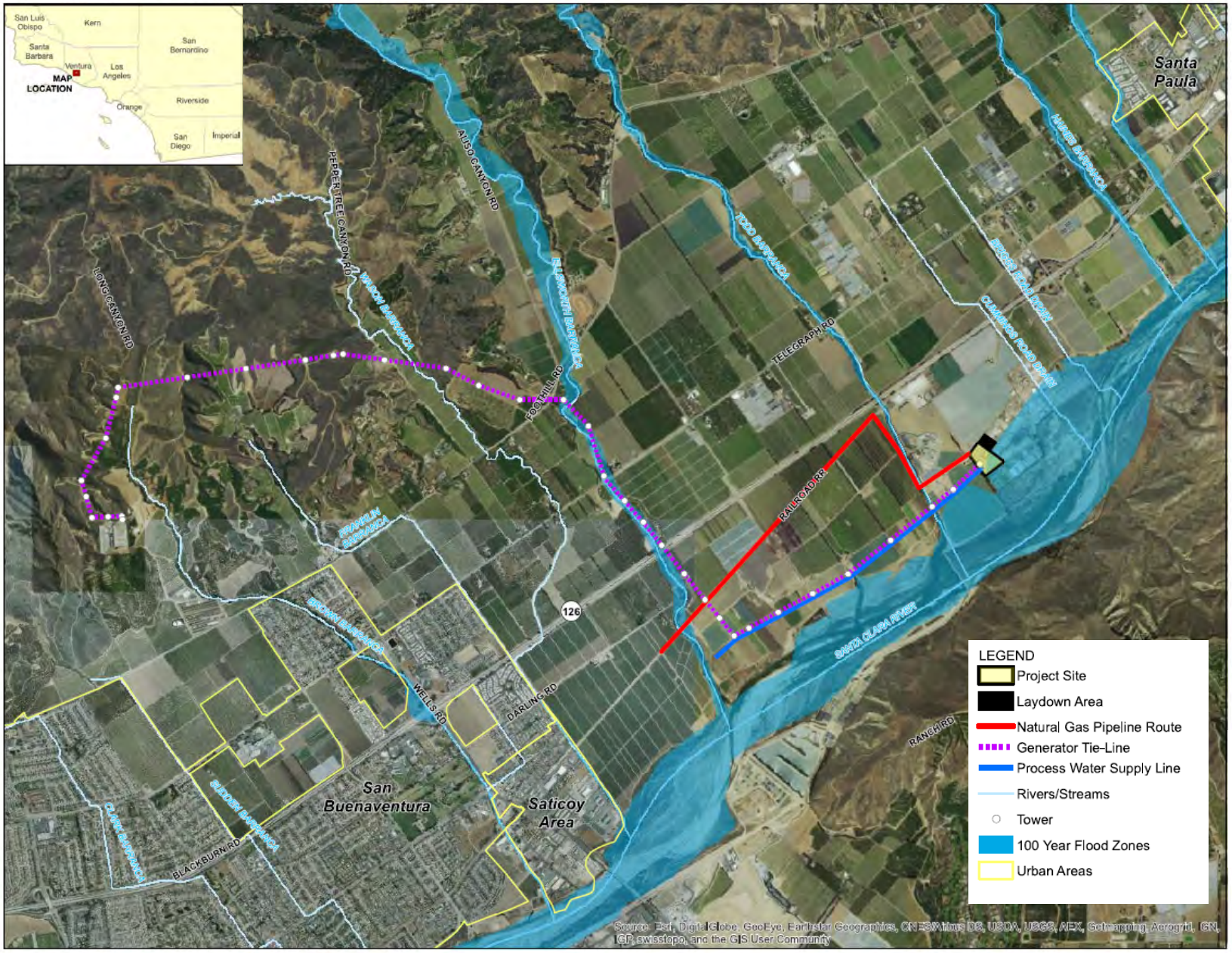
Mission Rock Energy Center – Santa Clara River Watershed

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: LARWQCB, "State of the Watershed – Report for the Santa Clara River Watershed." November 2006

SOIL & WATER RESOURCES - FIGURE 2

Mission Rock Energy Center – FEMA Floodplain



SOIL AND WATER RESOURCES

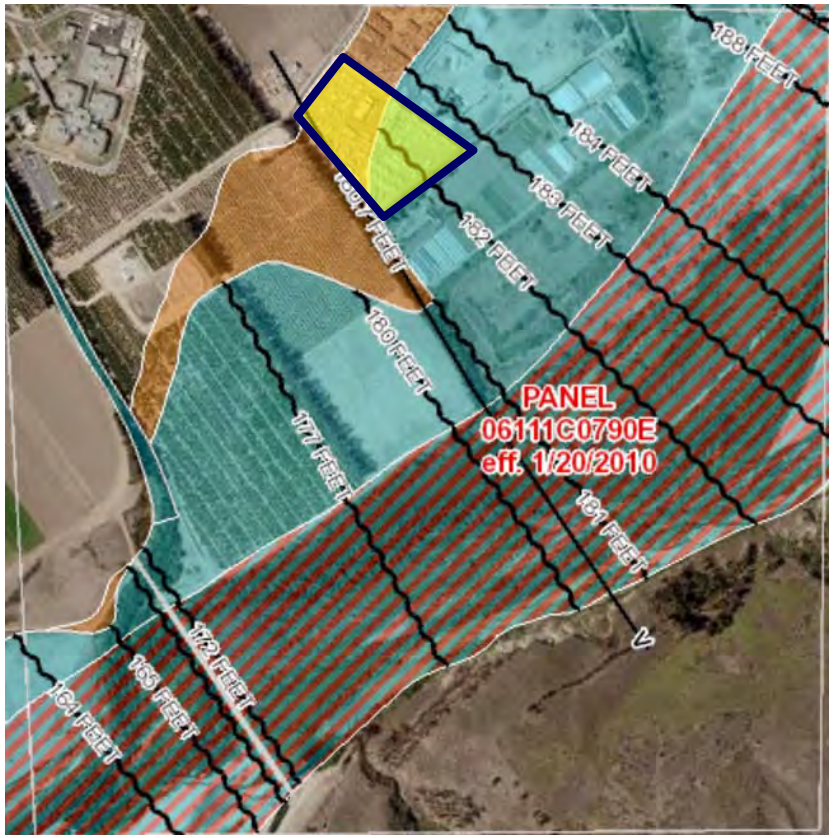
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CAL2015a Figure 5.15-1

SOIL & WATER RESOURCES - FIGURE 3

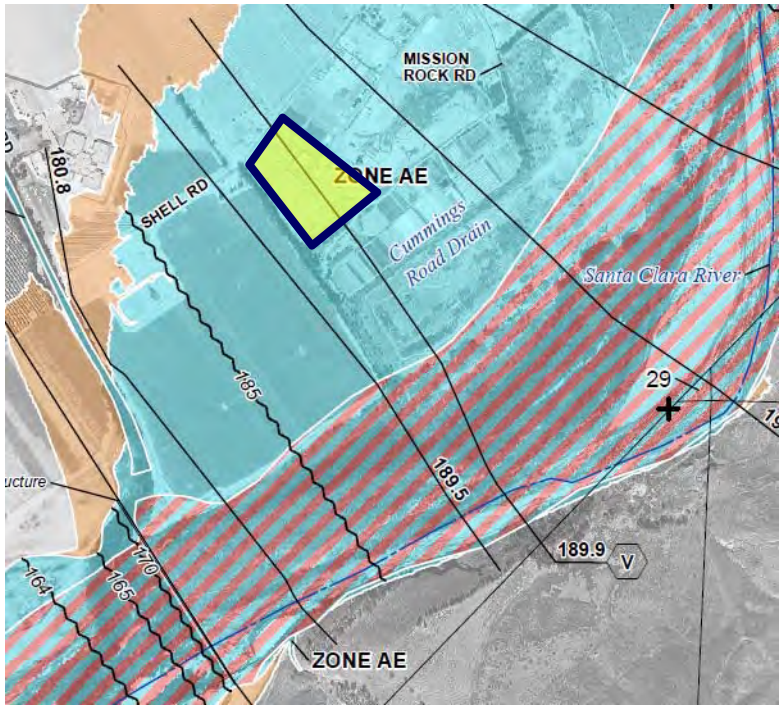
Mission Rock Energy Center – FEMA Flood Hazards

2010 Effective FIRM



FIRM – Flood Insurance Rate Map

Preliminary FIRM



Legend:

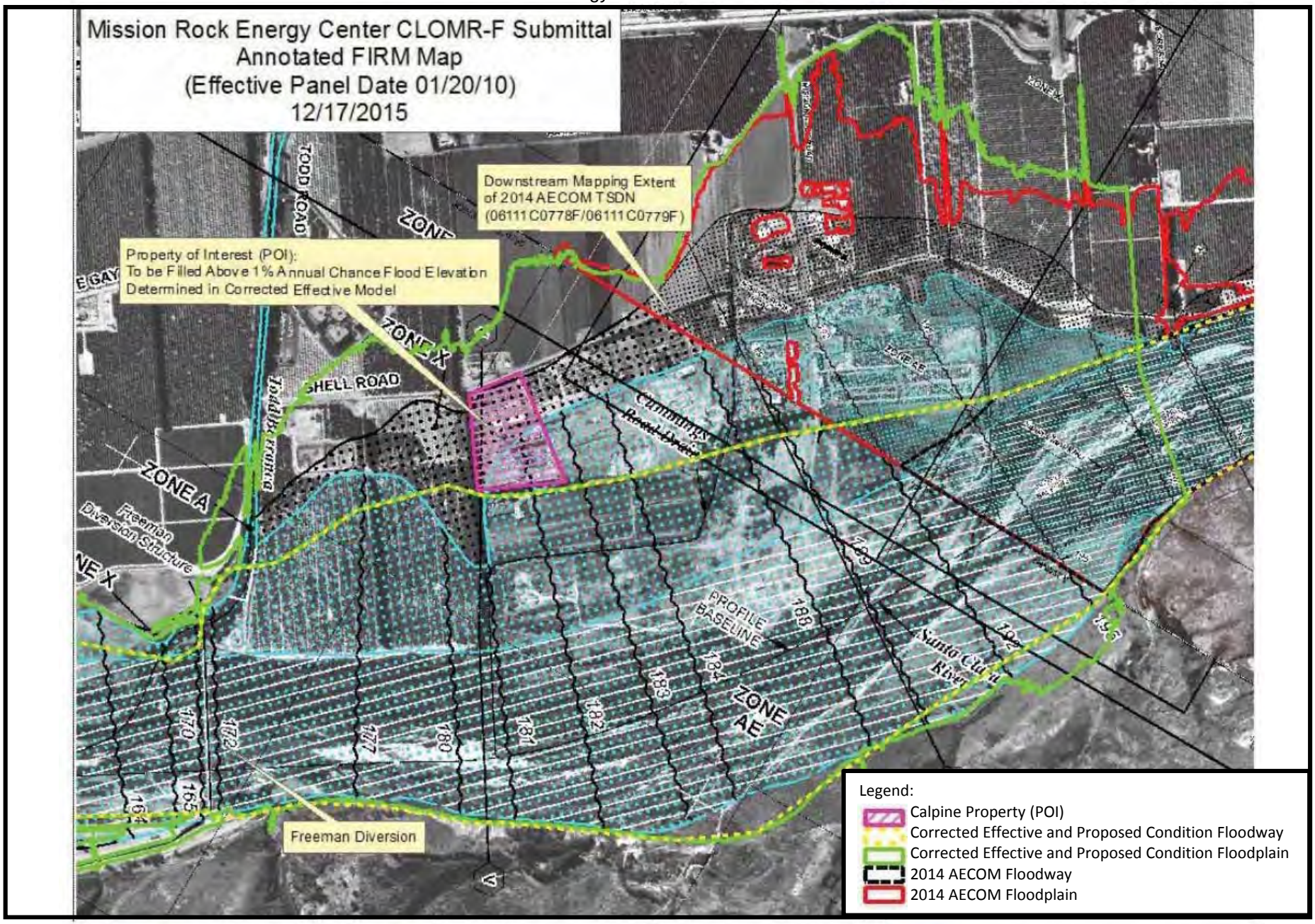
- Regulatory Floodway
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Project Site

SOIL AND WATER RESOURCES

SOURCE: FEMA Flood Map Service Center (https://msc.fema.gov/portal) accessed August 21, 2016

SOIL & WATER RESOURCES - FIGURE 4

Mission Rock Energy Center – CLOMR-F Submittal



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M2017e

SOIL & WATER RESOURCES - FIGURE 5

Mission Rock Energy Center – Project Site Final Elevations

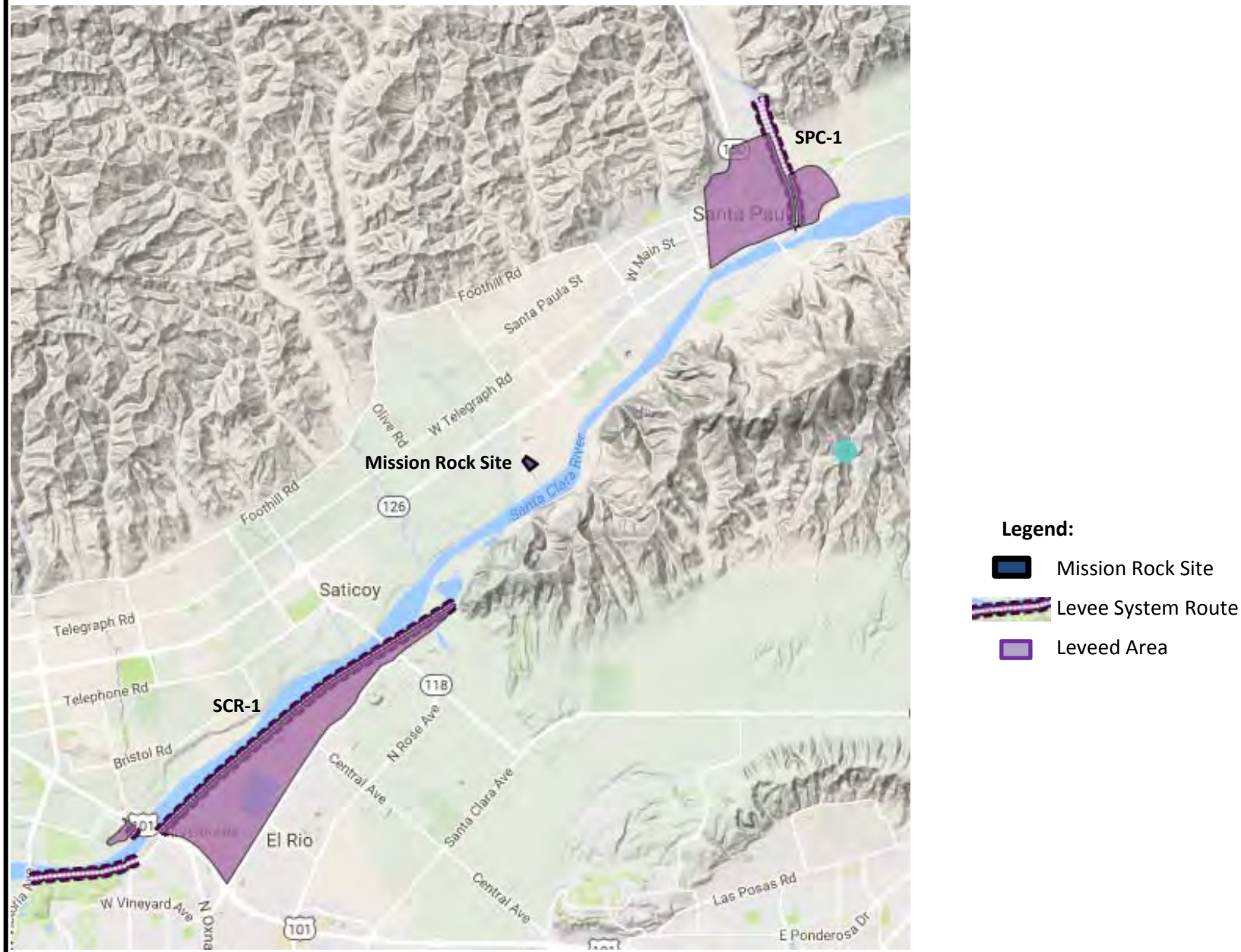
SOIL AND WATER RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M2017e

SOIL & WATER RESOURCES - FIGURE 6

Mission Rock Energy Center – Areas Protected by Levees



SOIL AND WATER RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: US Army Corps of Engineers, National Levee Database (http://nld.usace.army.mil) accessed 4/27/17

TRAFFIC AND TRANSPORTATION

Scott Polaske

SUMMARY OF CONCLUSIONS

Staff has analyzed the information provided in the application for certification (AFC) and acquired from other sources to determine the potential for the Mission Rock Energy Center (Mission Rock or project) to cause significant impacts to the surrounding traffic and transportation system. Staff has also evaluated mitigation measures in the form of conditions of certification that could reduce or eliminate the significance of these impacts.

The construction and operation of Mission Rock could result in significant impacts to the nearby traffic and transportation system. Condition of Certification **TRANS-2** would require implementation of a Traffic Control Plan (TCP) that would reduce the potential for accidents caused by construction traffic. Condition of Certification **TRANS-3** would require the project owner to restore any damage to roads caused by project construction-related vehicles to prevent hazards to the public. Conditions of Certification **TRANS-7** and **TRANS-8** would mitigate potentially significant impacts to aviation from the thermal plumes that Mission Rock would generate from the combustion turbine generator (CTG) stack. Condition of Certification **TRANS-7** would require obstruction marking and lighting of the combustion turbine generator (CTG) stack to alert pilots of the location of the plumes at night. Condition of Certification **TRANS-8** would require the project owner to work with the Federal Aviation Administration (FAA) and the Santa Paula Airport Manager to notify all pilots using the Santa Paula Airport and airspace above the Mission Rock site of potential plume hazards.

Mission Rock would comply with all applicable federal, state, and local transportation-related laws, ordinances, regulations and standards (LORS) and would result in less than significant impacts to the aspects of the traffic and transportation system which staff was able to fully analyze. A complete analysis of the potential impacts of the CTG stacks and transmission line on aviation activities will be made in the Final Staff Assessment. The applicant will need to submit FAA form 7460 and receive a determination prior to preparation of the Final Staff Assessment.

INTRODUCTION

In compliance with the California Environmental Quality Act (CEQA) and Energy Commission requirements, this analysis identifies the project's potential to cause significant impacts to the surrounding traffic and transportation system and proposes mitigation measures (conditions of certification) that would avoid or reduce these impacts to a less than significant level. This analysis also addresses the project's consistency with applicable LORS.

SETTING

The Mission Rock site is located at 1025 Mission Rock Road in unincorporated Ventura County, approximately 2 miles southwest of the city of Santa Paula border. Mission Rock would be constructed on approximately 9.8 acres within an industrial park, zoned General Industrial (M-3).

Regional access to the project site would be from State Route (SR) 126. Local access would be from South Briggs Road exit and direct access to the project site via a private road system consisting of Pinkerton Road, to Mission Rock Road and Shell Road. The private road system connects to Todd Road west of the project site at what is functionally a dead end at the Todd Road Jail security gate. Emergency vehicles are permitted to pass through this gate for the purposes of emergency access, however all other traffic to the private road system funnels through South Briggs Road. During months 2 through 6 of construction, trucks would be importing fill from a borrow site in the city of Fillmore, approximately 18 miles northeast of the project site. Trucks would leave the fill site and travel northeast on SR-23 (Grimes Canyon Road), turn westbound onto SR-126 and exit SR-126 at South Briggs Road.

The nearest airport is Santa Paula Airport, approximately 3.45 miles northeast of Mission Rock. For maps of the project site in relation to the regional and local traffic and transportation system, see **Traffic and Transportation Figure 1** and **Traffic and Transportation Figure 2**.

The following freeways and roads provide access to access to the Mission Rock site and may be impacted by construction and operation traffic.

STATE ROUTE 126

State Route (SR) 126 (also known as Santa Paula Freeway near the project area) is a major 47-mile long east-west freeway that extends from Ventura to Santa Clarita. In the general area of the project, State Route 126 runs east-west, provides two lanes in each direction, and has junctions with U.S. Route 101, SR-118, SR-150, SR-23, and Interstate 5. After passing SR-150 in Santa Paula, the freeway portion terminates and continues as a highway thereafter, known as East Telegraph Road. This route is heavily used by commuters traveling between Ventura and Santa Clarita. Access to the Mission Rock site from SR-126 is from the Briggs Road interchange. The posted speed limit is 65 miles per hour (mph).

SOUTH BRIGGS ROAD

South Briggs Road is a north-south, two-lane local roadway located north-east of the Mission Rock site that provides primary/local access to the site. South Briggs Road is approximately 1.5 miles long spanning from Foothill Road to the north of its intersection with State Route 126 and south to Pinkerton Road; the posted speed limit is 25 mph. Briggs Road terminates at an agricultural field to the south after intersecting with Pinkerton Road. South Briggs Road crosses SR-126 via bridge (overpass) at the South Briggs Road exit.

PINKERTON ROAD

Pinkerton Road is an east-west, two-lane, local road between Briggs Road to the east and Todd Road to the west. The paved portion of the road begins at Briggs Road and ends as Mission Rock Road branches south. An unpaved portion of Pinkerton is restricted by a private gate and bisects an agricultural field before intersecting with Todd Road immediately south of the Santa Paula Branch (railroad) Line. This road is within the Ventura County jurisdiction but is not maintained by the county. Pinkerton Road is privately maintained by the Mission Rock Road Association.

MISSION ROCK ROAD

Mission Rock Road is a north-south, two-lane, local road. Mission Rock Road is bounded by Pinkerton Road to the north and the mountains to the south where it dead ends at the Santa Clara River. This road is within the Ventura County jurisdiction but is not maintained by the county. Mission Rock Road is privately maintained by the Mission Rock Road Association.

SHELL ROAD

Shell Road is a two-lane east-west local road between Mission Rock Road to the east and Todd Road to the west. East of Mission Rock Road, Shell Road is a dirt road which provides access to nearby agricultural fields. This road is within the Ventura County jurisdiction but is not maintained by the county. Shell road is privately maintained by the Mission Rock Road Association.

TODD ROAD

Todd Road is a two-lane north-south local road which begins at West Telegraph Road, passes under SR 126, and crosses the Santa Paula Branch Line before ending at an intersection with Shell Road. Public access on Todd Road begins at West Telegraph Road and ends at the Ventura County Jail Todd Road Facility security gate. Todd Road would not serve construction or operation traffic needs of Mission Rock, but would be available for emergency responder vehicle access.

STATE ROUTE 23 (GRIMES CANYON ROAD)

State Route 23 is a 32-mile road broken into 3 non-continuous pieces beginning as Decker Canyon Road near Trancas in the city of Malibu, merging and branching from US-101 and SR-118 on its way north terminating in the city of Fillmore at an intersection with SR-126. The northern end of SR-23 is called Grimes Canyon Road, a two lane (one in each direction) road.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Traffic and Transportation Table 1 provides a general description of adopted federal state, and local LORS that apply to this project and pertain to the traffic and transportation. As part of staff's analysis of Mission Rock traffic and transportation impacts, staff evaluated the project's compliance with these LORS.

Traffic and Transportation Table 1

Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
Code of Federal Regulations Title 49, Subtitle B: Sections 171-177 and 350-399	Requires proper handling and storage of hazardous materials during transportation.
Code of Federal Regulations Title 14 Aeronautics and Space, Part 77 - Objects Affecting Navigable Airspace	Establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; provides for aeronautical studies to determine the effect of physical obstructions on the safe and efficient use of airspace; and oversees the development of antenna farm areas.
State	
California Vehicle Code: Div. 2, Chap. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14; Div. 14.1; Div. 14.3; Div. 14.7; Div. 14.8; & Div. 15	Includes regulations pertaining to: licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials. Addresses the Commission of Highway Patrol's authority to issue licenses for the transportation of hazardous materials.
California Streets and Highway Code: Div.1, Chap. 1, Article 3, Section 117; Div. 1, Chap. 3; Div. 2, Chap. 5.5 and 6	Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits. Requires permits for the location in the right-of-way (ROW) of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.
California Health and Safety Code: Section 25160 et seq.	Pertains to operators of vehicles transporting hazardous materials; promotes safe transportation of hazardous materials.
State of California Department of Transportation (Caltrans), Caltrans Guide for the Preparation of Traffic Impact Studies	Caltrans' target level of service (LOS) for state highway facilities is at the transition between LOS C and LOS D. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing state highway is operating at less than the appropriate target LOS, the existing measure of effectiveness should be maintained.
Local	
County of Ventura General Plan, Transportation/Circulation Policies, Section 4.2.2	Policy 4.2.2-3: The minimum acceptable LOS for road segments and intersections within the Regional Road Network and Local Road Network shall be as follows: a) LOS D for all county thoroughfares and federal highways and state highways in the unincorporated area of the county… c) LOS C for all county-maintained local roads d) At any intersection between two roads, each of which has a prescribed minimum acceptable LOS, the lower LOS of the two shall be the minimum acceptable LOS for that intersection.
2009 Ventura County Transportation Commission, Congestion Management Program (CMP), Chapter 2	2. Sets a minimum LOS of "E" for the CMP road network. The minimum standard of LOS E only applies to the CMP; local agency LOS minimum standards may be higher than the CMP minimum.
City of Fillmore 1988-2010 General Plan, Circulation Element	Streets and Highways: Policy 5 The city will adopt LOS "C" as the minimum acceptable LOS for city streets and intersection (weekday P.M. peak period), and LOS "D" within the Downtown Specific Plan area and along Highway 126

Applicable LORS	Description
City of Santa Paula General Plan, Circulation Element	Section V: Implementation Measures - Streets and Highways; 1. The city should adopt LOS "C" as the minimum acceptable LOS for city streets and intersections (weekday PM peak period) 2. The city should require mitigation measures for projects where the predicted operation of streets and intersections is less than LOS "C".

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. 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;

2. 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;

3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

4. Substantially increase hazards due to a design feature (e.g., sharp curves, dangerous intersections, or glint or glare) or incompatible uses (e.g., farm equipment);

5. 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. Produce a thermal plume in an area where flight paths are expected to occur;

8. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities; or

9. Have individual environmental effects that, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable or compound or increase other environmental impacts.

Ventura County Initial Study Assessment Guidelines

The Ventura County Resource Management Agency Planning Division provided Energy Commission staff the *Ventura County Initial Study Assessment Guidelines* (April 26, 2011) for staff to use when analyzing the potential project impacts in accordance with Ventura County's adopted CEQA environmental significance thresholds (VCPD2016a). In addition to Appendix G CEQA Guidelines, staff has used the *Ventura County Initial Study Assessment Guidelines*, discussed below, in preparing this analysis. The guidelines are shown in italics.

Roads and Highways – Level of Service (LOS)

Roadway Level of Service (LOS) is the perception by the users of a traffic facility of the quality of service provided by that roadway. LOS is a stratified system, represented by the letters "A" through "F" with "A" representing the most favorable driving conditions and "F" representing the least favorable.

The determination of the significance of traffic impacts to a road segment or intersection LOS is based on policies 4.2.2-4 and 4.2.2-5 of the Ventura County General Plan Goals, Policies and Programs and policy 4.1.2-4 of the Ojai Area Plan. Policies 4.2.2-4 and 4.2.2-5 state: 4.2.2-4. Except as otherwise provided in the Ojai Area Plan, County General Plan land use designation changes and zone changes shall be evaluated for their individual and cumulative impacts, and discretionary development shall be evaluated for its individual impact on existing and future roads, with special emphasis on the following:

(a) Whether the project would cause existing roads within the Regional Road Network or Local Road Network that are currently functioning at an acceptable LOS to function below an acceptable LOS;

(b) Whether the project would add traffic to existing roads within the Regional Road Network or the Local Road Network that are currently functioning below an acceptable LOS; and

(c) Whether the project could cause future roads planned for addition to the Regional Road Network or the Local Road Network to function below an acceptable LOS.

Staff conducted an analysis of impacts to LOS for study roads and highways consistent with the Ventura County Initial Study Assessment Guidelines. See subsections "Total Construction Traffic" and "Operation Traffic" for staff's analysis of LOS impacts.

Roads and Highways – Safety and Design of Public Roads

County maintained roads (Public Roads) are designed to provide for the needs of roadway users while maintaining the integrity of the environment. County maintained roads are defined as those roads accepted into the county road system by action of the Board of Supervisors in accordance with § 941 of the California Streets and Highways Code. The "Ventura County Road Standards" (Road Standards), as maintained by the Public Works Agency and adopted by the Board of Supervisors, establish uniform policies and procedures for the design and construction of County roads and appurtenances.

Project-Specific Impacts

1. *A project that impacts Public Roads or intersections will have a less-than-significant impact on the design of the Public Road system or intersections only if the existing Public Road or intersection complies with current County Road Standards and the proposed Public Road or intersection improvement or encroachment associated with by the project or required by the CEQA lead agency also complies with County Road Standards.*

2. *A project that individually impacts a Public Road intersection so that the intersection exceeds any one of the traffic signal warrants established by the Manual for Uniform Traffic Control Devices, as supplemented and adopted by the State of California (MUTCD/CA), has the potential to cause a significant impact.*

3. *A project that impacts Public Roads or intersections will have a less-than-significant impact on the safety and design of the Public Road System only if the existing Public Road or intersection complies with current County Road Standards, and if the affected Public Road or intersection has a collision or incident rates at or below state wide averages for similar facilities.*

Roadway Segments

4. *A project has a potentially significant adverse project-specific traffic impact on any road segment if the roadway segment has been identified by the statewide integrated traffic records system as experiencing a high incident rate.*

5. *A project has a potentially significant adverse project-specific traffic impact on the affected road segment if that road segment is identified as being a part of an existing road system that is noncompliant with current County road standards.*

6. *A proposed project located in the unincorporated area where the existing road systems were developed prior to any road safety engineering standards will have a significant adverse impact on road safety.*

7. *A project will have a potentially significant adverse project-specific traffic impact at any un-signalized intersection on the Public Road system if the project-specific impacts result in any of the warrants established by the MUTCD-CA being met.*

8. *A project with project-specific impacts to any intersection that has been identified in the Substandard Impact Areas Vicinity, Upper Ojai Substandard Impact Area, Santa Susana Area Substandard Impact Area, Ventu Park Area Substandard Impact Area, Yerba Buena Area Substandard Impact Area, or the Santa Susana Knolls Area Substandard Impact Area Maps shall be considered significant unless mitigated.*

To ensure less-than-significant impacts to the design of the county maintained public road system, staff proposes conditions of certifications requiring public road and intersection improvements or encroachments associated with the project be compliant with current county road standards. See Condition of Certification **TRANS-3** and **TRANS-4** for specific proposed requirements.

For further discussion of project impacts to the safety and design of county maintained public roads see the **Worker Safety and Fire Protection** section of this staff assessment.

Roads and Highways – Safety and Design of Private Access

If a private road or private access is proposed for a project, design of the private road has a significant impact when the Ventura County Fire Protection Department's (VCFPD) adopted Private Road Guidelines and access standards cannot be met. These Private Road Guidelines are in concert with state guidelines; the standards for apparatus access roads are set forth in the Fire Code.

The project does not propose the creation of a new private road but would rather use an existing private road system for site access. A discussion of the current status of the private road system's compliance with current VCFPD Private Road Guidelines can be found in the **Worker Safety and Fire Protection** section of this staff assessment.

Roads Highways – Tactical Access

Tactical access is an organized system of roads/access to and from a project utilized in the event of any emergency or disaster. More than one access road may be impaired by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

If a road or access, public or private, is proposed for a project, tactical access does have a significant impact if there is a single access and the access road exceeds 800 feet in length. The VCFPD has adopted Private Road Guidelines that are in concert with state guidelines. By providing a second access, the classification can be changed to less than significant. Other mitigation factors considered are:

1. *Road design (width, gradient, etc.).*

2. *Fire hazard area.*

3. *Structures provided with fire sprinklers.*

For information on emergency access to the Mission Rock project site see the **Worker Safety and Fire Protection** section of this staff assessment.

Level of Service and Study Locations

Level of service is a generally accepted measure used by traffic engineers and planners to describe and quantify the traffic congestion level on a particular roadway or intersection in terms of speed, travel time, and delay. The *Highway Capacity Manual 2010*[1] includes six levels of service for roadways and intersections. These levels of service range from LOS A, the best and smoothest operating conditions, to LOS F, the worst, most congested operating conditions.

Staff reviewed the following locations on the surrounding roadway network for potential project impacts to LOS:

Freeways and Roadways:

- State Route 126- west of Briggs Road
- State Route 126- east of Briggs Road
- Briggs Road- north of State Route 126 Over Pass
- Briggs Road- south of State Route 126 Over Pass
- Pinkerton Road- between Briggs Road and Mission Rock Road
- Mission Rock Road- between Pinkerton Road and Shell Road
- Mission Rock Road- south of Shell Road
- Shell Road- west of Mission Rock Road
- SR-23 - Grimes Canyon Road

Intersections:

- State Route 126 east exit and Briggs Road
- State Route 126 west exit and Briggs Road
- Mission Rock Road and Pinkerton Road
- Mission Rock Road and Shell Road
- State Route 126 and A Street
- State Route 126 and B Street
- State Route 126 and C Street
- State Route 126 and Hallock Drive

As identified in **Traffic and Transportation Table 1** above, staff used the LOS standards of Caltrans and Ventura County Transportation Commission, as well as those in the general plans of Ventura County and the cities of Santa Paula and Fillmore, as

[1]The *Highway Capacity Manual* (HCM) is the most widely used resource for traffic analysis. The Highway Capacity Manual is prepared by the Transportation Research Board Committee on Highway Capacity and Quality of Service. The current edition was published in 2010.

significance thresholds to determine whether Mission Rock-generated traffic impacts would be significant.

DIRECT/INDIRECT TRAFFIC AND TRANSPORTATION IMPACTS AND MITIGATION

The direct and indirect traffic and transportation impacts of the proposed Mission Rock project are discussed in this subsection.

Construction Traffic

If approved, construction of Mission Rock would occur over a period of 23 months, beginning in November 2018 and completing by September 2020 (CAL2015a). Peak construction traffic would be during the 6th month of construction (April of 2019). Construction would generally occur between 7 AM and 7 PM on weekdays and 8 AM and 5 PM on Saturdays, with possible schedule adjustments during the summer months and to complete critical construction activities or make up for deficiencies in the project schedule. During the start-up and testing phase of the project, some construction activities (e.g., concrete pours, testing of new equipment) may occur 24 hours a day, 7 days a week.

For access to the Mission Rock site during construction, most construction vehicles (including both worker and truck traffic) would travel eastbound or westbound on SR-126, exiting to travel south on Briggs Road, west on Pinkerton Road, and south on Mission Rock Road or Shell Road to the site.

Linear Facilities Construction

The proposed 2.4-mile-long natural gas pipeline “Route A” would run along Shell Road, Todd Road and the Santa Paula Branch Line to the existing Southern California Gas Company (SoCalGas) Lines 404/406 located west-southwest of the Mission Rock site. Construction of the pipeline within existing streets (Shell Road) would not require complete road closure, but may require periodic lane closures or may affect the width of travel lanes during pipeline construction. The road closures would result in a temporary disruption of traffic; however, there is very little traffic on this portion of Shell Road as it dead ends at the Todd Road Jail. The road closures could result in a temporary disruption in emergency access from Todd and Shell Roads to the project site. Impacts to locomotive service on Santa Paula Branch Line are not anticipated but all necessary permits associated with working in the railroad right-of-way would be obtained. An encroachment permit would be obtained from the county for any work which occurs within the public right-of-way.

A similar encroachment permit would be necessary for natural gas pipeline “Route B,” which would also run in the Santa Paula Branch line right-of-way for a much shorter distance. With Route B, the natural gas pipeline would also enter the project site in the same right-of-way as the recycled water pipeline and transmission line, instead of following Shell Road to Todd Barranca. Where the transmission line turns north (at pole #6) and departs from the recycled water pipeline, Route B would also turn north, following the generator tie-line route as far as the railroad right-of-way. Route B would then turn to the west-southwest and like Route A, run along the railroad right-of-way to the point of interconnection with SoCalGas lines 404/406 (CH2M2017j).

The proposed generator tie-line and recycled water pipeline would be constructed on private property. Impacts to public roads would be limited to road crossings. The impact at these crossings would be temporary and any required encroachment permits would be obtained from the county for any work which occurs within the public right-of-way. For more information regarding gen tie-line impacts see the “Total Construction Traffic” subsection below. **TRANS-2** would require the applicant to submit a plan to maintain emergency access at all times, including during temporary encroachment periods on Shell or Todd roads which could impact emergency vehicle access. **TRANS-4** would require permits to be obtained for encroachments into public rights-of-way. With implementation of **TRANS-2** and **TRANS-4,** impacts associated with linear facilities would be less than significant.

Worker Traffic

The applicant estimates that 60 percent of the Mission Rock construction workforce would commute via eastbound SR-126 from locations west and south of the site, including from the cities of Ventura and Oxnard. The remaining 40 percent of the construction workforce would commute to the project site via westbound SR-126 from areas east and south of the site, including from the cities of Santa Paula and Santa Clarita. The average size of the workforce over the entire construction period would be approximately 87 workers (CAL2015a). (See the **Socioeconomics** section of this staff assessment for more information.)

Analysis of Mission Rock construction impacts focuses on the peak construction traffic month which would employ the highest number of workers compared to other phases of construction, generate the most vehicle trips, and result in the worst-case scenario for traffic impacts.

The peak traffic construction period in April 2019 would involve 143 construction workers. The applicant estimates that 16 percent (23 workers) of the 143 construction workers would carpool, resulting in 240 daily one-way trips during the peak construction month (120 one-way trips in and 120 one-way trips out). All worker trips would arrive and depart during the morning (7-9AM) and evening (4-6PM) peak hours. This would result in 120 one-way workforce vehicle arrival trips during the morning peak hours and 120 one-way workforce vehicle departure trips during the evening peak hours. These trips would be staggered within the peak hours, with arrivals and departures not occurring at precisely the same times (CAL2015a).

Truck Traffic

The applicant estimates that 20 percent of the Mission Rock construction truck traffic would travel via eastbound SR-126 from locations west and south of the site, including from the cities of Ventura and Oxnard. The remaining 80 percent of the construction truck traffic would travel to the project site via westbound SR-126 from areas east and south of the site, including from the cities of Santa Paula and Santa Clarita.

Approximately 120,000 cubic yards of fill would be transported to the Mission Rock site over a 5 month period from December 2018 to April 2019 to elevate the entire site to the 191.9 feet above mean sea level finish grade elevation (CH2M2016g). This would mean some parts of the project footprint would have to be elevated as much as 10 feet. The

peak traffic construction month would occur in April 2019, or the 6th month of construction. In this peak month, there would be an average of 85 delivery/haul truck trips per day, including 61 soil import trips and 24 other delivery truck trips associated with site civil improvements (raising the footprint as much as 10 feet) and plant construction. It is estimated that the truck trips would be spread evenly throughout a 10-hour work day, resulting in about 9 round trips per hour, including during the morning and afternoon peak hours. For purposes of this analysis, the truck trips were converted to passenger car equivalent (PCE) trips at a ratio of 1.5 passenger cars for each truck, consistent with the 2010 Highway Capacity Manual guidelines. As shown in **Traffic and Transportation Table 2**, the project would generate a peak of 128 PCE daily truck trips in April 2019.

Trucks would travel the same route to the Mission Rock site as the majority of construction worker traffic, which is from SR-126 to Briggs Road, Pinkerton Road, Mission Rock Road, and Shell Road.

Total Construction Traffic

The total number of workforce and truck trips generated during peak construction would be 496 daily one-way (120 worker roundtrips added to 128 PCE truck roundtrips). Of these one-way trips, 292 would occur during peak hours: 146 one-way trips during the morning peak and 146 one-way trips during the evening peak. See **Traffic and Transportation Table 2**, below, for details. This table summarizes all peak construction traffic generated by Mission Rock, including construction worker trips and delivery/haul truck trips. Staff used the total construction traffic shown in this table to analyze Mission Rock's potential construction traffic impacts.

Traffic and Transportation Table 2
Total Daily Trips During Peak Construction

Vehicle Type	Daily Roundtrips	One-Way Daily Trips	One-Way AM Peak Hour Trips	One-Way PM Peak Hour Trips
Construction Worker Vehicles (16 percent carpool)	120	240	120	120
Trucks (Delivery/Haul Vehicles)	85	170	18	18
Trucks (Delivery/Haul Vehicles) (PCE)[1]	128	256	26	26
Total Construction Traffic (PCE)	248	496	146	146

[1] PCE, or passenger car equivalent, is a conversion unit for comparing the traffic impacts of a large truck with the traffic impacts of a smaller car. Here, one truck trip is equivalent to 1.5 PCE.

Source: CAL2015a, p. 5.12-14

Staff compared traffic LOS on nearby roads, freeways, and intersections during baseline 2014 conditions (provided by Caltrans) and during peak Mission Rock construction. **Traffic and Transportation Table 3**, below, shows this comparison for study freeway and roadway segments. As reflected in the table, all study roadway segments would continue to operate at or above the applicable LOS standard during peak construction. There would be no change in LOS at any study road segment. Several road segments are omitted from this table including Pinkerton, Shell, and Mission Rock roads. These are private roads within the county limits, maintained by a private road association, and recent LOS data is not available. Local access to Pinkerton, Shell, and Mission Rock roads is exclusively via Briggs Road. Staff concludes that impacts to the LOS of Briggs Road south of Telegraph Road would reasonably represent impacts to the private road system.

Traffic and Transportation Table 3

Roadway Average Daily Traffic (ADT) and LOS: A Comparison Between Baseline and Peak Construction Conditions No.	Freeway/Road Segment	2014 ADT and LOS	2014 Plus Peak Construction ADT and LOS
1	SR-126 West of Briggs Rd.	50,000 LOS C	50,195 LOS C
2	SR-126 East of Briggs Rd.	48,000 LOS C	48,301 LOS C
3	Briggs Road South of Telegraph Rd.	3,300 LOS A	3,796 LOS A
4	SR-23 from Happy Camp Rd. to Grimes Canyon Rd.	6,300 LOS A	6,392 LOS A
5	SR-23 from Grimes Canyon Rd. to Barnsdale Ave.	6,300 LOS A	6,392 LOS A
6	SR-23 from Barnsdale Ave. to SR-126	9,100 LOS A	9,192 LOS A
7	SR-126 from A St. to Los Serenos Rd.	28,000 LOS A	28,092 LOS A
8	SR-126 from Los Serenos Rd.to Sespe Ranch	29,000 LOS B	29,092 LOS B
9	SR-126 from Sespe Ranch to Hallock Dr.	31,500 LOS B	31,592 LOS B
10	SR-126 from Hallock Dr. to SR-150	29,500 LOS A	29,592 LOS A
11	SR-126 from SR-150 to Palm Ave.	36,500 LOS A	36,592 LOS A
12	SR-126 from Palm Ave. to Peck Rd.	40,000 LOS A	40,092 LOS A
13	SR-126 from Peck Rd. to Briggs Rd.	29,500 LOS A	29,592 LOS A

Source: CAL2015a, p. 5.12-14, CH2M2016g p. 13-14

Traffic and Transportation Table 4, below, shows peak construction impacts to studied intersections. For the morning and evening peak traffic hours, it compares baseline 2014 intersection delay and LOS to peak construction intersection delay and

LOS. Prior to project construction, all intersections operate at an acceptable LOS during both the morning and evening peak hours. During construction the AM peak hour LOS for the SR-126 westbound ramp and Briggs Road would change from LOS A to LOS B and both the AM and PM peak hour LOS for SR-126 eastbound ramp and Briggs would change from LOS A to LOS B. The minimum acceptable LOS for thoroughfares and intersections in Ventura County is LOS D. While the peak construction related traffic would cause changes to LOS in the study intersection, a drop below the minimum LOS standard is not expected.

There are three signalized intersections along the proposed infill truck route, within the city of Fillmore. SR-126 intersects with A, B, and C streets before continuing out of the city limits to the west. Current traffic data is not available for any of the intersections along the route in the city of Fillmore. SR-126 also intersects with Hallock Drive near the eastern boundary of the Santa Paula city limits. Current traffic data for this signalized intersection is also not available. Staff does not expect the proposed 9 infill trips per hour that would pass through the cities of Fillmore and Santa Paula to significantly impact the LOS of the mentioned intersections.

Traffic and Transportation Table 4
Peak Hour Intersection LOS: A Comparison Between Baseline and Peak Construction Conditions

#	Study Intersection	Year 2014 AM/PM Peak Hour Volume-to-Capacity and LOS		Year 2014 Plus Peak Construction AM/PM Peak Hour Volume-to-Capacity and LOS		LOS Standard
		AM	PM	AM	PM	
1	SR-126 westbound ramp and Briggs Road	9.6 seconds[3] LOS A	10.1 seconds[3] LOS B	11.7 seconds[3] LOS B	11.0 seconds[3] LOS B	LOS D[1]
2	SR-126 eastbound ramp and Briggs Road	9.4 seconds[3] LOS A	9.7 seconds[3] LOS A	10.3 seconds[3] LOS B	11.8 seconds[3] LOS B	LOS D[1]

[1] County of Ventura jurisdiction - LOS standard is "D" for county thoroughfares and intersections

Source: CAL2015a, p. 5.12-7, p. 5.12-7

While peak construction of Mission Rock would cause less than significant impacts to traffic LOS, temporary public road or lane closures and congestion at the SR-126 and Briggs Road associated with linear facilities construction could result in temporary impacts during peak hour traffic. Staff proposes **TRANS-2**, which would require implementation of a Traffic Control Plan (TCP) requiring a proper signage to warn the public and traffic flaggers if needed. **TRANS-**2 would also require the applicant to submit a plan to maintain emergency access at all times, including during temporary encroachment periods on Shell or Todd roads which could impact emergency vehicle access. Staff also proposes **TRANS-4** which would verify that the project owner obtains permits for encroachments into public rights-of-way.

Heavy haul vehicles and construction truck traffic could pose hazards to motorists by damaging local roadway pavement surfaces.

To mitigate this potential impact, staff has recommended Condition of Certification **TRANS-3**, which would require the project owner to restore all roads, easements, and rights-of-way damaged by project construction-related traffic. With implementation of this condition, road damage would not cause significant impacts to motorist safety. **TRANS-3** would also require all repairs and road improvements to be consistent with the policies and procedures of the Ventura County Road Standards for the design and construction of roadways.

Ventura County does not resolve easement encroachments between fee payers of the private road association. If a paying member of the private road association unreasonably interferes with the easement rights of another paying member then Ventura County treats the conflict as a civil matter between two private parties (VCP2016). If construction traffic-related damages occur to the roads, easements, or rights-of-way within the private road system, **TRANS-3** would require the project owner to work with the Mission Rock Road Association to restore the road to preconstruction conditions or to a level required by the road association agreement.

With implementation of **TRANS-1** through **TRANS-4**, construction traffic impacts would be less than significant.

Operation Traffic

If approved, the applicant anticipates that Mission Rock would be operational by September 2020. Plant operation would require approximately 15 full-time employees, all of which are expected to commute from within Ventura County. The facility would be staffed 7 days a week, 24 hours a day. Normal operation of the plant would require approximately 15 aqueous ammonia deliveries annually and some occasional deliveries and maintenance-related trips (CAL2015a). Operation traffic would be negligible and would not significantly impact daily LOS on nearby freeways, roadways and intersections.

Parking

The AFC states that the 2.89-acre temporary construction-laydown area immediately north of the Mission Rock site would be adequate space for parking. Staff confirmed that the 2.89-acre temporary construction laydown area would be large enough to accommodate construction parking needs. On average, a parking lot must have 350 square feet of space for every parked vehicle, which includes both the actual parking space and room for circulation. During peak construction, the proposed project would require parking for approximately 120 construction worker vehicles. Using the standard of 350 square feet needed for each parking space, approximately 0.96 acres would be needed for construction vehicle parking. The remaining 1.93 acres would be left to accommodate the laydown area for construction.

During project operation, 15 full-time employees would work at Mission Rock. Not all employees would be on-site at the same time. There would be a total of 4 parking spaces available onsite CAL2015a).

Parking impacts associated with construction and operation are expected to be less than significant.

Hazardous Materials and Waste Transportation

Both the construction and operation of Mission Rock would involve transportation of hazardous materials and waste to and from the site. The transport vehicles would be required to follow federal and state regulations governing proper containment vessels and vehicles, including appropriate identification of the nature of the contents. The applicant has stated in the AFC the project owner's intent to comply with these regulations.

Condition of Certification **TRANS-5** would verify the project owner complies with applicable regulations and contracts with licensed hazardous materials delivery and waste hauler companies. Compliance with applicable hazardous materials and waste transportation regulations would ensure that there would be no significant impacts to roadways and the traveling public. See the **Hazardous Materials Management** and **Waste Management** sections of this staff assessment for more information.

Rail Service

Ventura County Initial Study Assessment Guidelines

Railroads are an important component of the regional transportation system. A project will normally have a significant impact on a railroad if it would individually or cumulatively substantially interfere with an existing railroad's facilities or operations.

Union Pacific Railroad provides rail freight service from its main coast line which runs from the Santa Barbara County line along the coast south through Ventura to Oxnard and then east through Camarillo, Moorpark, and Simi Valley to the Los Angeles County line. The Santa Paula Branch Line, which runs nearest the proposed project site, travels along the Santa Clara River Valley from Montalvo in a northeasterly direction through Santa Paula and Fillmore to Piru (CAL2015a p. 5.12-12). Two rail operators are permitted to use the track, Union Pacific and the Fillmore and Western. Union Pacific has one train per month making deliveries to Santa Paula and Fillmore and Western only has occasional use of the track west of Santa Paula, so infrequent that there is no schedule (CEC2017f).

Significant impacts to rail service are not expected. The new natural gas pipeline would be constructed along Todd Road and the Southern Pacific Railroad right-of-way. Permits would be obtained from the county for work that occurs within the railroad right-of-way (CEC2017f).

With implementation of **TRANS-4**, ensuring all permits would be obtained for work performed in the railroad right-of-way; impacts to rail service are expected to be less than significant.

Bus Service

Ventura County Initial Study Assessment Guidelines

Bus Transit

Bus transit is an important component of the regional transportation system. A project will normally have a significant impact on bus transit if it would substantially interfere with existing bus transit facilities or routes, or if it would create a substantial increased demand for additional or new bus transit facilities/services.

The VISTA operated by Ventura County Transportation Commission provides transit connections between the cities in Ventura County and neighboring Santa Barbara and Los Angeles counties. Within the Mission Rock study area, VISTA Highway 126 is a commuter-oriented line that provides service between Fillmore and Ventura. Line 126 provides westbound and eastbound service Monday through Saturday, with reduced service hours on Saturdays. Line 126 operates on approximately 15- to 60-minute headways. The nearest bus stop to the Mission Rock site is located approximately 2 miles northeast at the KMART on Faulkner Road. No existing service is provided near the Mission Rock site. VISTA Express Transit provides service along the SR-23 corridor connecting Westlake Village with the Moorpark Metrolink station and making stops at the Thousand Oaks Transit Center and the Thousand Oaks Library.

The project would add traffic to SR-126 and SR-23, where bus lines operate, but these vehicles would not cause traffic level of service to fall below acceptable standards. The project would not significantly delay bus service or obstruct bus infrastructure. Impacts to bus service would be less than significant.

Bicycle Facilities

Ventura County Initial Study Assessment Guidelines

Pedestrian/Bicycle Facilities

Impact on Existing and Planned Facilities - A project that will cause actual or potential barriers to existing or planned pedestrian/bicycle facilities may have a significant impact. Determinations of impact significance, both project and cumulative, must be made on a case-by-case basis.

Demand for new or expanded facilities - Projects that generate or attract pedestrian/bicycle traffic volumes meeting requirements for protected highway crossings or pedestrian and bicycle facilities may have a significant impact. Pedestrian overcrossings, traffic signals and bikeways are examples of these types of facilities. Determinations of impact significance, both project and cumulative, must be made on a case-by-case basis.

The Mission Rock site is located in an agricultural area with no bicycle facilities provided in the vicinity of the site. The Santa Paula Branch Line is a planned 32-mile Class I (separated bike path)/Class II (signed, on street bike lane) trail from Highway 101 in the

west to the Los Angeles County line in the east. The alignment is generally along the former Southern Pacific Railroad right-of-way. The Santa Paula Branch Line rail corridor passes through the cities of Santa Paula and Fillmore as well as active agricultural areas. As of 2015, three trail segments have been constructed in Santa Paula, Fillmore, and Piru. In response to significant opposition from agricultural interests, trail construction in the agricultural areas of unincorporated Ventura County was prohibited by a 15-year agreement between the Ventura County Transportation Commission (VCTC), Ventura County, and property owners adjacent to the Santa Paula Branch Line. This agreement expired in February 2015. The future construction schedule of the trail is unknown at this time (VCTC 2016a).

The project would not generate demand for new or expanded bicycle facilities. Construction and operation traffic would not result in significant LOS impacts and would not obstruct bike lanes; therefore, the project's impacts to bicycle facilities would be less than significant.

Pedestrian Facilities

The Mission Rock site is located in an agricultural area with no pedestrian facilities provided in the vicinity of the site. Because the proposed project site is located in a rural area, there are minimal pedestrian activities and facilities nearby. There are no sidewalks or crosswalks within the immediate vicinity of the project site; the nearest sidewalks and crosswalks are located approximately 1.3 miles north-east of Mission Rock.

The project would not generate demand for new or expanded pedestrian facilities. Construction and operation traffic would not result in significant LOS impacts and would not obstruct pedestrian facilities; therefore, the project's impacts to pedestrian facilities would be less than significant.

Harbor Facilities

Ventura County Initial Study Assessment Guidelines

Harbor Facilities

A project will have an impact on a harbor if the construction or operation of the project will increase the demand for commercial boat traffic and/or adjacent commercial boat facilities. If such an increase will occur, the significance of the impact (project and cumulative) and any mitigation measures must be determined by the following public entities:

Ventura Harbor: Ventura Port District
Channel Islands Harbor: Harbor Department, County of Ventura
Port of Hueneme: Oxnard Harbor District

The Army Corps of Engineers and the State Department of Boating Waterways are also involved in harbor improvements and operations.

Project construction and operation would not increase the demand for commercial boat traffic and/or adjacent commercial boat facilities. The project would have no impact on county harbor facilities.

Airports/Aviation Activities

Ventura County Initial Study Assessment Guidelines

Airports

Decision-makers must protect airports from land uses that are clearly incompatible and those that tend to impede the County's ability to provide safe and adequate public service. Incompatible uses include, but are not limited to: high buildings, residential units, refineries, churches and schools within the airport sphere of interest. Generally, projects with the potential to generate complaints and concerns, or which are within the sphere of influence of either County operated airport, would interfere with the County's mission and be deemed as having a significant project-specific and/or cumulative impact. Projects located outside the sphere of influence of any airport are considered to have a less-than-significant impact.

Airports in the vicinity of the proposed Mission Rock site are Santa Paula Airport, Camarillo Airport, and Oxnard Airport. See **Traffic and Transportation Figure 1 – Regional Traffic and Transportation** for the locations of these airports. The Mission Rock site does not fall within the designated sphere of influence of these airports.

Santa Paula Airport

Santa Paula Airport is a non-towered privately owned facility located about 3.5 miles northeast of the proposed Mission Rock site that is home to 309 aircraft and close to 100,000 flight operations per year. The 309 aircraft based on the field consist of 295 single-engine, 6 multi-engine, and 2 ultralight aircraft, 4 helicopters, and 2 glider airplanes. There are an average of 266 aircraft operations per day, of which approximately 75 percent are attributed to locally based aircrafts and 25 percent are attributed to aircraft based at other airports (AirNav, 2017a).

Santa Paula Airport has one runway 4-22, which runs northeast-southwest and is 2,713 feet long and 60 feet wide. Runway 4 operates a right-hand traffic pattern, while Runway 22 operates a left-hand traffic pattern. The pattern altitude of the Santa Paula Airport for all aircraft is 848 feet MSL (mean sea level) (AirNav, 2017a).

The Santa Paula Airport is an untowered, unlit airport, which the Federal Aviation Administration (FAA) classifies as class “G” airspace.

Federal code, FAR 91.119 Minimum Safe Altitudes, dictates height restrictions for flights in class “G” airspace. Except when necessary for takeoff or landing, no person may operate an aircraft below an altitude of 1000 feet. above the highest obstacle when flying over congested areas such as cities, towns, or settlements. However, if flying over waterways or sparsely populated areas, a pilot may fly as low as 500 feet. above the ground surface or structure (CEC2016j).

It is common practice at the Santa Paula Airport to follow the Santa Clara River on route to the traffic pattern to avoid the noise sensitive areas of the city north of the freeway and a mobile home park west of the airport. Helicopters are instructed to approach and depart to the south-east of the airport, never crossing the runway and avoiding all fixed-wing aircraft (CEC2016j).

Camarillo Airport

Camarillo Airport is a public airport owned by the County of Ventura, located approximately 6.5 miles south of the Mission Rock site. The airport is home to approximately 520 aircraft: 381 single-engine, 53 multi-engine and 30 ultralight aircraft, 36 jets, and 20 helicopters. Aircraft operations average 374 flights per day. Operations comprise approximately 49 percent transient general aviation, 49 percent local general aviation, 2 percent air taxi, and less than 1 percent military aviation (AIRNAV 2017c).

Camarillo Airport has one runway, 8-26, which runs east-west and is 6,013 feet long and 150 feet wide. The Runway 8 side has a right-hand traffic pattern, while the Runway 26 side has a left-hand traffic pattern. The pattern altitude of the Camarillo Airport for single-engine aircraft is 875 feet above ground level (AGL). For multi-engine and jet aircraft, the pattern altitude is 1,000 feet AGL (AIRNAV 2015c).

Flights approaching Camarillo Airport from the coast (from the west), the central valley (from the north), and the Santa Paula Airport (from the north-east) tend to convene in their paths over the Saticoy Bridge, used as a reporting beacon, before entering the arriving traffic pattern.

Oxnard Airport

The Oxnard Airport is a public non-hub airport owned by the County of Ventura, located approximately 9.5 miles southwest of the proposed Mission Rock site. The Oxnard Airport is home to approximately 157 aircraft: 116 single-engine, 26 multi-engine, and 15 helicopter aircraft. Aircraft operations average 163 flights per day. Operations are approximately 50 percent local general aviation, 40 percent transient general aviation, 9 percent air taxi, and 1 percent military aviation (AIRNAV 2015b).

The Oxnard Airport has one runway, 7/25, which runs east-west and has a left-hand traffic pattern. It is 5,953 feet long and 100 feet wide. Runway 25 provides an instrument approach. The pattern altitude of the Oxnard Airport for single-engine aircraft is 1,000 feet AGL. For multi-engine aircraft and jets, the pattern altitude is 1,400 feet AGL (AIRNAV 2015b).

Crop Dusting Activities

The area between the cities of Saticoy and Santa Paula is generally characterized by agricultural uses. Staff is aware that helicopter assisted applications of pesticide and airborne fertilizers are a common practice in the area. At the time of the publishing of this staff assessment, staff is still determining the full extent of the impacts this proposed project may have on these crop dusting practices.

Obstruction Hazards

To assess Mission Rock's aviation impacts, staff examined whether the project's five 60-foot-high CTG stacks, 80 to 200-foot-tall transmission structures (36 total monopoles), and thermal plumes could obstruct or impair airspace, posing hazards to aircraft pilots and passengers. See **Traffic and Transportation Figure 3 – Transmission System**, a map of the proposed transmission system.

CTG Stack and Transmission Towers/Obstruction of Airspace

According to Title 14 of the Code of Federal Regulations, Section 77.9(b)(2), for construction or alterations within 10,000 feet of an airport with a runway no more than 3,200 feet in length, the FAA shall be notified if the height of the construction or alteration exceeds an imaginary surface extending outward and upward at a slope of 50 to 1 from the nearest point of the nearest runway of the airport. The Santa Paula Airport runway is 2713 feet in length; however, the Mission Rock site is located about 18,000 feet from the airport runway. Therefore, this regulation does not apply.

The FAA provides a Notice of Criteria Tool used to determine whether a structure or project would trigger FAA review. Based on the applicant's results using this FAA tool, the project includes structures which are "in proximity to a navigation facility and may impact the assurance of navigation signal reception." Based on these results, the FAA has requested the applicant submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, for each of the five exhaust stacks and 36 transmission structures in order to review Mission Rock for any potential hazards to air navigation.

The applicant stated in the Application for Certification they intend to file Form 7460-1 with the FAA for the CTG stack and transmission system due to the potential impact on navigational aids. Energy Commission staff cannot make a complete determination of aviation impacts until an FAA hazard determination is available. Staff is concerned about potential hazards associated the proposed transmission lines. While the height of the transmission towers would not exceed 200 feet AGL, certain points of the transmission line may exceed 200 feet AGL as the transmission system traverses the hills surrounding the Santa Clara Substation. According to Title 14 of the Code of Federal Regulations, Section 77.9(a), the FAA shall also be notified if the height of any construction or alternation exceeds 200 feet AGL. Energy Commission staff believes the applicant should file Form 7460-1 regardless of signal interference, due to the relative height of the transmission lines to the ground. An FAA determination following the submittal of Form 7460-1 is valid for one year.

To anticipate unforeseen delays in the licensing or construction process, staff has proposed Condition of Certification **TRANS-6** to verify that the applicant files this notice

in compliance with FAA regulations and has a valid hazard determination. **TRANS-6** would verify that the applicant files an FAA Form 7460-1 with the FAA for the project's five CTG stacks, entire transmission system, and any cranes or other construction equipment that would exceed a height of 200 feet. With implementation of **TRANS-6**, Mission Rock's compliance with FAA regulations would be verified, and its physical structures would be evaluated for hazard to air navigation.

A complete determination of aviation impacts associated with the CTG stacks and transmission system cannot be made until a FAA Hazard Determination is available. This hazard determination should evaluate impacts to aviation activity, with respect to navigation signal reception and potential impacts of the proposed transmission lines in the project area. The applicant will need to submit FAA form 7460 and receive a determination prior to preparation of the Final Staff Assessment.

Thermal Plumes

Mission Rock's CTG stacks would produce thermal plumes. Energy Commission staff uses a 5.3 meters/second (m/s) threshold to evaluate potential impacts to aircraft from thermal plumes. Thermal plume velocities would be greatest at the discharge point, with plume velocities decreasing with increasing altitude. Light aircraft flying through thermal plumes exceeding 5.3 m/s[2] in vertical velocity may experience moderate to severe turbulence, which could compromise pilot control and aircraft stability. Energy Commission Air Quality staff modeled plume velocity for the project's CTG stacks. Air Quality staff found that thermal plume vertical velocity exceeded 5.3 m/s up to an altitude of approximately 1,490 feet AGL. At altitudes higher than approximately 1,490 feet AGL, thermal plume velocity was below the critical 5.3 m/s threshold for endangering aircraft. See **Appendix TT-1** and **Appendix TT-2** of this section for more information.

As discussed earlier, the FAA issues a Determination of Hazard for the project's CTG stacks, transmission structures, and any construction cranes. The FAA's review only considers hazards posed by physical structures, not plumes. However, the FAA Aeronautical Information Manual recommends that pilots should fly upwind of thermal plumes out of caution and that pilots should refer to the Airport/Facility Directory, where notes may caution pilots and identify the location of structures emitting plumes (FAA 2017). **TRANS-8** is consistent with the FAA recommendation and would ensure plumes associated with Mission Rock operation do not impact aviation activities within the navigable airspace above the site. **TRANS-8** would require the project owner to work with the FAA and the Santa Paula Airport Manager to notify all pilots using the Santa Paula Airport and airspace above the Mission Rock site of potential plume hazards. These activities would include, but not be limited to: the project owner working with the FAA in issuing a Notice to Airmen (NOTAM) of the identified plume hazard; working with the Santa Paula Airport Manager to add a remark about the plume hazard to the Santa

[2] This threshold is based on the Australian Government Civil Aviation Safety Authority's Advisory Circular 139-5(1), which provides 5.3 m/s or 10.6 m/s as plume vertical velocity thresholds to use for assessing impacts to aircraft (CASA 2012). Based on the fact that Mission Rock may be in an area frequently overflown by Santa Paula Airport air traffic, staff selected 5.3 m/s as the threshold to use. It is important to note the 5.3 m/s threshold is an average velocity including velocities at the edge of a plume and in the center. The velocity at the center of the plume is predicted to be twice the average velocity (10.6 m/s).

Paula Airport Arrival and Departure Procedures and updating the Los Angeles Sectional Chart and other applicable airspace publications used by pilots to indicate that pilots should avoid direct overflight of Mission Rock below 1,490 feet AGL. Proposed Condition of Certification **TRANS-7**, discussed earlier, would require lighting of the CTG stack to help pilots identify the location of the plume at night.

The airspace over Mission Rock is not congested with air traffic, and the surrounding airspace is not restricted. There are no visual flight rule (VFR) routes directly over the project site. The site is not directly under a traffic pattern, approach path or arrival path. Therefore, staff concludes it is feasible for pilots to avoid overflight of Mission Rock, and that **TRANS-7** and **TRANS-8** are adequate to reduce any potential aviation impacts to a less than significant level.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable. *Cumulatively considerable* means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, current projects, and reasonably foreseeable future projects (Cal. Code Regs., tit. 14, § 15130).

To evaluate cumulative impacts to traffic LOS, staff reviewed known past, current, and reasonably foreseeable future projects that could generate traffic on the Mission Rock study roadways. The location of these projects with respect to Mission Rock is presented in **Traffic and Transportation Figure 4 – Cumulative Projects**. **Traffic and Transportation Table 6** (below) provides information regarding these known projects.

Traffic and Transportation Table 6
Cumulative Projects

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
1	Todd Road Jail Evidence Storage Building, PL14-0125	Adjustment to CUP 4735-2 to authorize a 20,000 sq. ft. evidence storage building at the Todd Rd Jail.	600 Todd Rd, Santa Paula	Constructed
2	Todd Road Jail Medical Wing Expansion	60,000 sq. ft. of a medical wing.	600 Todd Rd, Santa Paula	Approved
3	Permit Adjustment to Authorize a One-Year Time Extension for a Zoning Clearance for Construction (LU 11-0018)	Continued use of truck transportation operation and proposed new use of contractor's service and storage yard. Authorizes installation and use of storage racks, air compressor, cargo container, covered used oil storage tank, and storage enclosure. 1,000 gallon septic tank installation as part of the septic system to provide sewage disposal services for 1200 sq. ft. building. Domestic water provided by City of Santa Paula Water Works.	734 Mission Rock Road, Santa Paula	Approved. Zoning clearance issued Jan. 2017. Building permits not pulled yet.
4	Santa Paula West Business Park Specific Plan (SPWBPSP), 3-CDP-04	Mixture of light manufacturing, research and development, professional office and supporting commercial uses. Proposed on 53-acres of agricultural land.	Telegraph Rd & Beckwith Rd, Santa Paula	Proposed
5	Calpipe Phase 2, 13-CDP-05	New 30,000 sq. ft. industrial building.	957 Calpipe Rd, Santa Paula	Under Construction
6	O'Kote Pipe Factory Project, 15-CDP-06	Conditional use permit request for 52,000 sq. ft. industrial factory. 120,800 sq. ft. surface lot for on-site parking for 111-vehicles. Parcel currently used for agricultural row crops; half of the parcel proposed for development- other half remain in agricultural production.	630 Todd Ln, Santa Paula	Proposed
7	12-CUP-03	New vehicle parking/maintenance use and eventually a waste disposal operation business.	906 Corporation St, Santa Paula	Approved
8	13-CDP-06	Two new commercial/light industrial buildings. 36,000 sq. ft. general light industrial (Phase 2).	100-106 Calavo St, Santa Paula	Under Construction
9	14-DR-10	6 multi-family units	327 Acacia Rd, Santa Paula	Under Construction
11	Darling Apartments,PROJ-7166	Mixed Use, 43 apts., 2 live/work units and 2,100 sq. ft. commercial/retail.	11166 Darling Rd, Ventura	Under Construction

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
13	Citrus Dr/Citrus II, PROJ-8427	78-unit, 3-story apt. building.	11156-1172 Citrus Dr, Ventura	In planning process
14	Crosstown Water Pipeline Project, 10-CI-03	8,065 linear ft. of buried water pipeline to connect discharge pipeline from Steckel Water Conditioning Facility at the Steckel Dr/Santa Barbara St intersection to Pleasant St/10th St intersection. Includes 3 small potable water and storm water pipelines.	Citywide, Santa Paula	In design stage, construction projected for Spring 2018
15	Gisler Ranch Mixed Use, PROJ-8428	3-story mixed use development- 43 apts. and 1,200 sq. ft. retail.	11101 Carlos St, Ventura	In planning process
17	Parklands Apartments, PROJ-4222	173 apts. 3 stories with a community building.	SW corner of Wells and Telegraph Rd, Ventura	Under Construction
18	Northbank, PROJ-6270	117 single family homes, 31 affordable triplex/quadplex, 50 apts.	Eastern terminus of North Bank Dr. Ventura	In planning process
19	Habitat for Humanity, 13-CDP-02	Eight, 4-bedroom single family residences.	Trinity Ln and Santa Paula St, Santa Paula	Under Construction
20	Westwood/Parklands, PROJ-03829	216 detached homes, 110 attached homes.	Southwest corner of Wells Rd and Telegraph Rd, Ventura	Under Construction
22	Enclave at Northbank, PROJ-4184	84 residential lots, density bonus concessions for 98 residential units consisting of 84 single-family units and 14 multi-family (7 duplexes).	Southeast corner of Saticoy Ave and Northbank Dr, Ventura	Under Construction
23	The Farm (Residential), PROJ-8446	131 single family homes, 34 townhomes, 2 parks and 3 mini parks.	Southeast corner of Telegraph Rd and S Saticoy Ave, Ventura	Approved
27	Santa Barbara County Reliability Project	Reconstruct existing 66 kV subtransmission facilities within existing and new utility rights-of-way between the Santa Clara Substation in Ventura County and the Carpinteria Substation located in Santa Barbara County.	City of Ventura, Ventura County to City of Carpenteria, Santa Barbara County	Approved. Coastal Development Permit required from Santa Barbara County. Estimated 2 year construction.
29	Voelker Property,	Residential Project- 18 single family	8324 Telegraph	In planning

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
	PROJ-8150	homes. APN 088-281-040	Rd, Ventura	process
30	14-CDP-02	44 single family homes	1226 Ojai Santa Paula Rd, Santa Paula	Proposed
31	Williams Homes / River Rock Project (City Project No. 2014-CDP-02)	40 new homes and the retention/rehabilitation of the Hardison House main residence and barn/stables. Project requires demo of existing structures (excluding Hardison House, barn/ stables which are a historic resource). 9.18-acres to remain open space.	1226 Ojai Road, Santa Paula	Approved
33	Limonera Company - East Area 1 Specific Plan Amendment	501-acre site for up to: (1) 1,500 residential dwelling units, (2) 240,000 sq. ft. commercial and light industrial, (3) 9.2-acres of civic uses for school facilities, and 225.3-acres open space and park uses.	Telegraph Rd. and Padre Ln (east of Santa Paula Creek), Santa Paula	Construction would occur continuously during 10-year period. Development of four phases based on market conditions. In design stage (specific maps). Designing Phase 1. Preliminary for multi-family units submitted in March/April 2017. Hallock Center Area portion of site (SE) developed portion. Tree removal, grading. Construction start date unknown.
34	04-TM-01	19 lot residential subdivision.	Cliff Dr and Forrest Dr, Santa Paula	Plan Check
38	PL16-0085	Relocation antenna within the Conditional Use Permit (SES Americom	5990 Solano Verde Rd,	Approved

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
		satellite) control facility. Installation of 9 utility poles (40 ft.) and electrical lines within county right-of-way along the southern and eastern property boundary. Lines to connect with Southern California Edison (SCE) utility lines that serve the federal aviation administration and future transmission bandwidth needs. One 200 sq. ft. storage shelter.	Somis	
41	Island View Communities, PROJ-2008	154 apartments, 4 stories, 3.8-acres.	1776 Alameda Ave, Ventura	Under Construction
45	Puente Power Project	Project sited on approximately 3 acres of the north portion of existing 36-acre Mandalay Generating Station (MGS). Replaces 2 gas-fired steam-generating units at MGS with a new General Electric Frame 7HA.01 single-fuel combustion turbine generator and associated auxiliaries. Developed on previously disturbed vacant brownfield land.	393 North Harbor Blvd, Oxnard	Proposed (Final Staff Assessment published Dec. 2016). Estimated construction start October 2018. With decommissioning and demolition of MGS units 1 & 2 brings total duration 39 months.
46	State Route 126 Safety Route Enhancement Project	Two design options. Design Option 1: Concrete Median Barrier Design, Option 2: Raised Median Island with Visual Markers. Common Features of Both Design Options: 1. Construct roundabouts; 2. Widen road curves; 3. Acceleration/deceleration lane at railroad crossings; 4. Construct retaining walls. Improve existing highway access including driveways at various locations. Project length approximately 7 miles.	State Route 126 and E street, Fillmore	Proposed (Draft Environmental Impact Report to be released late summer/fall 2017) Construction estimated to begin 2021.

Mission Rock's traffic and transportation impacts are primarily driven by construction-related activities of the project. The peak construction traffic month would be during the 6th month of construction (April 2019). The construction associated with the cumulative projects listed above have the potential to overlap with the construction of Mission Rock. Regional access to all listed cumulative projects and the Mission Rock site would be via SR-126.

Traffic and Transportation Table 3 shows the comparison of baseline conditions on various segments of SR-126 and conditions during the peak construction month. All studied segments of SR-126 are projected to continue operating at acceptable LOS during the peak construction traffic month.

The State Route 126 Safety Route Enhancement Project is proposed to improve existing highway access and safety along the 7-mile project area, estimated to begin construction in the year 2021. This highway enhancement project could temporarily cause delays on the project segment of SR-126 before generally improving access and safety. The 23-month construction phase for Mission Rock is expected to be complete in September 2020. Mission Rock peak construction traffic would not have a cumulative impact on the State Route 126 Safety Route Enhancement Project.

The cumulative projects listed are at different stages of approval and construction so the traffic generated by each of them individually would be spread out over time and would not likely cumulatively impact the surrounding roadway network during the peak construction period of the project, however cumulative impacts do have the potential to occur. Traffic generated by Mission Rock peak construction period would not, independently, significantly impact the LOS of the surrounding road network but could add an incremental impact. **TRANS-2** would require the staggering of construction-related trips to off-peak hours to the maximum extent possible. Therefore Mission Rock's contribution to these impacts would be less than cumulatively considerable with implementation of **TRANS-2**.

COMPLIANCE WITH LORS

With the proposed conditions of certification, Mission Rock would comply with all traffic-related LORS. **Traffic and Transportation Table 7** provides a general description of the applicable LORS and a summary of project compliance.

Traffic and Transportation Table 7
Project Compliance with Adopted Traffic and Transportation LORS

Applicable Law	Description	Consistency
Federal		
Code of Federal Regulations Title 49, Subtitle B: Sections 171-177 and 350-399	Requires proper handling and storage of hazardous materials during transportation.	Consistent. The applicant has stated that Mission Rock would conform to this law by requiring shippers of hazardous materials to use the required markings on their transportation vehicles and to use properly licensed contractors and employees for hazardous materials transportation (CAL2015a, 5.12.2.2, 5.12.5.1). **TRANS-5** would verify the project owner's compliance with these regulations.

Applicable Law	Description	Consistency
Code of Federal Regulations Title 14 Aeronautics and Space, Part 77 - Objects Affecting Navigable Airspace	Establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; provides for aeronautical studies to determine the effect of physical obstructions on the safe and efficient use of airspace; and oversees the development of antenna farm areas.	Consistent. The applicant has stated that Mission Rock would file FAA Form 7460-1 for the five proposed CTG stacks and transmission system (CAL2015a, 5.12.2.5, 5.12.5.1). Staff has proposed Condition of Certification **TRANS-6** to verify that the applicant files this notice in compliance with FAA regulations. **TRANS-6** would also verify that the applicant files an FAA Form 7460-1, Notice of Proposed Construction or Alteration, with the FAA if any cranes or other construction equipment are used that would exceed a height of 200 feet.
State		
California Vehicle Code: Div. 2, Chap. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14; Div. 14.1; Div. 14.3; Div. 14.7; Div. 14.8; & Div. 15	Includes regulations pertaining to: licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials. Addresses the Commission of Highway Patrol's authority to issue licenses for the transportation of hazardous materials.	Consistent. The applicant has stated that the Mission Rock would conform to the applicable provisions of the California Vehicle Code (CAL2015a, 5.12.5.2). Verification of compliance would be achieved by implementation of **TRANS-1** and **TRANS-5**. **TRANS-1** requires the project owner to demonstrate compliance with the applicable agencies' limits on vehicle sizes and weights, driver licensing, and truck routes, including evidence that the necessary permits for roadway use have been obtained. **TRANS-5** requires the project owner to comply with all regulations and to contract only with licensed hazardous materials delivery and waste hauler companies.
California Streets and Highway Code (S&HC): Div.1, Chap. 1, Article 3, Section 117; Div. 1, Chap. 3; Div. 2, Chap. 5.5 and 6	Includes regulations for the care and protection of State and County highways and provisions for the issuance of written permits. Requires permits for the location in the right-of-way (ROW) of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.	Consistent. The applicant has stated that any required permits for offsite construction within roadways or rights-of-way would be obtained and would conform to the S&HC. (CAL2015a, 5.12.5.2) **TRANS-4** would be imposed to verify any permits required for work in the right-of-way are obtained.
California Health and Safety Code: Section 25160 et seq.	Pertains to operators of vehicles transporting hazardous materials; promotes safe transportation of hazardous materials.	Consistent**.** The applicant has stated in the AFC the project owner's intent to comply with these regulations (CAL2015a, 5.12.5.2). Condition of Certification **TRANS-5** would require the project owner to comply with applicable regulations and to contract with licensed hazardous materials delivery and waste hauler companies.
State of California Department of Transportation (Caltrans),	Caltrans' target LOS for state highway facilities is at the transition between LOS	Consistent. Mission Rock-generated traffic would not cause degradation of LOS below these standards.

Applicable Law	Description	Consistency
Caltrans Guide for the Preparation of Traffic Impact Studies	"C" and LOS "D". However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing state highway is operating at less than the appropriate target LOS, the existing measure of effectiveness should be maintained.	
Local		
County of Ventura General Plan, Transportation/Circulation Policies, Section 4.2.2	Policy 4.2.2-3: The minimum acceptable LOS for road segments and intersections within the Regional Road Network and Local Road Network shall be as follows: a) LOS D for all county thoroughfares and federal highways and state highways in the unincorporated area of the county… c) LOS C for all county-maintained local roads d) At any intersection between two roads, each of which has a prescribed minimum acceptable LOS, the lower LOS of the two shall be the minimum acceptable LOS for that intersection.	Consistent. Mission Rock-generated traffic would not cause degradation of LOS below these standards.
2009 Ventura County Transportation Commission, Congestion Management Program, Chapter 2.	Sets a minimum LOS of E for the CMP road network. The minimum standard of LOS E only applies to the CMP; local agency LOS minimum standards may be higher than the CMP minimum.	Consistent. Mission Rock-generated traffic would not cause degradation of LOS below these standards.
City of Fillmore 1988-2010 General Plan, Circulation Element	Streets and Highways: Policy C-5 The city will adopt level of service (LOS) "C" as the minimum acceptable LOS for city streets and intersection (weekday P.M. peak period), and LOS "D" within the Downtown Specific Plan area and along	Consistent. Mission Rock-generated traffic would not degrade intersection LOS below these standards. The 9 infill trucks per hour during the peak construction traffic period would have a negligible impact on the intersection LOS along SR-126 in Fillmore.

Applicable Law	Description	Consistency
	Highway 126.	
City of Santa Paula General Plan, Circulation Element	Section V: Implementation Measures - Streets and Highways; 1. The city should adopt level of service (LOS) "C" as the minimum acceptable LOS for city streets and Intersections (weekday P.M peak period) 2. The city should require mitigation measure for projects that are required for streets and intersections where the predicted operation is less than LOS "C".	Consistent. Mission Rock-generated traffic would not degrade intersection LOS below these standards. The 9 infill trucks trips per hour during the peak construction traffic period would have a negligible impact on the intersection LOS on SR-126 in Santa Paula.

ENVIRONMENTAL JUSTICE

Environmental Justice Figure 1 shows the presence of an environmental justice (EJ) population based on race and ethnicity within a six-mile radius of the project site. **Environmental Justice Figure 2** and **Table 3** shows that the below-poverty-level population in Santa Paula Census County Division and the population receiving free or reduced price meals in the Rio Elementary School District and Somis Union School District constitute an EJ population based on low income.

Staff concludes that construction and operation of Mission Rock would not cause significant adverse direct, indirect, or cumulative traffic and transportation impacts on the project area's transportation system. The project's traffic impacts are predominantly associated with temporary construction traffic influx to the studied roadway segments. Alternative modes of transportation including bus transit, walking, and cycling can often be the only modes of transportation available to EJ communities. An impact to one or more of these modes of transportation could cause a disproportionate impact to a low income community. Mission Rock would have a less than significant impact on bus transit, pedestrian accessibility, and bicycle facilities. As discussed above, with implementation of staff's proposed conditions of certification the construction and operation of Mission Rock would not have any significant impacts to the surrounding road system and Mission Rock's traffic would not disproportionately affect the EJ population.

NOTEWORTHY PUBLIC BENEFITS

Mission Rock would not have any noteworthy public benefits from a traffic and transportation perspective.

CONCLUSIONS AND RECOMMENDATIONS

Staff has analyzed the proposed Mission Rock's impacts to the nearby traffic and transportation system. The construction and operation of Mission Rock could result in significant impacts to the nearby traffic and transportation system. Staff proposes Condition of Certification **TRANS-2** which would require implementation of a Traffic Control Plan (TCP) requiring a schedule of temporary public road or lane closures along with proper signage to warn the public. **TRANS-2** would also require staggered truck trips entering and leaving the site during peak hours.

Another possible project impact would be from thermal plumes, which could pose hazards to aircraft. Under certain conditions, Mission Rock would generate high-velocity thermal plumes exceeding 5.3 meters per second (m/s), the threshold velocity of concern for light aircraft, at altitudes up to 1,490 ft. AGL. Staff proposes Conditions of Certification **TRANS-7** and **TRANS-8** to mitigate potentially significant impacts to aviation. Condition of Certification **TRANS-7** would require obstruction marking and lighting of the CTG stack to alert pilots of the location of the plumes at night. Condition **TRANS-8** would require the project owner to work with the FAA and the Santa Paula Airport Manager to notify all pilots using the Santa Paula Airport and airspace above the Mission Rock site of potential plume hazards.

At the time of this staff assessment the project owner has not submitted FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the FAA for the CTG stack and transmission system. Energy Commission staff cannot make a determination on the impact of these structures to aviation traffic until a FAA hazard determination is made. However, staff concludes that with implementation of the proposed conditions of certification listed below **TRANS-1, TRANS-2, TRANS-3,TRANS-4, TRANS-5, TRANS-7,** and **TRANS-8**, Mission Rock would comply with all applicable LORS related to traffic and transportation and would result in less than significant impacts to the aspects of the traffic and transportation system staff was able to fully analyze. Pending further analysis into the potential impacts of the CTG stacks and transmission system to aviation activities, a complete determination on impacts to aviation will be included in the Final Staff Assessment.

Staff concludes that the project's traffic and transportation impacts would be less than significant on the EJ population and would not disproportionately impact the EJ population.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 Roadway Use Permits and Regulations

The project owner shall comply with limitations imposed by the Department of Transportation (Caltrans) and other relevant jurisdictions, including the city of Santa Paula, the city of Fillmore and the county of Ventura, on vehicle sizes and weights, driver licensing, and truck routes.

Verification: In the Monthly Compliance Reports (MCRs), the project owner shall identify the permits received during that reporting period (copies of actual permits are not required in the MCR) to demonstrate project compliance with limitations of relevant jurisdictions for vehicle sizes, weights, driver licensing, and truck routes. The project owner shall retain copies of permits and supporting documentation on-site for compliance project manager (CPM) inspection if requested.

TRANS-2 Traffic Control Plan and Heavy Haul Plan

Prior to the start of construction, the project owner shall prepare a Traffic Control Plan (TCP) for the project's construction 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 California Department of Transportation (Caltrans) District 7 office, the county of Ventura Transportation Commission, the city of Santa Paula Department of Transportation and the city of Fillmore Department of Transportation in the preparation and implementation of the TCP. The project owner shall submit the proposed TCP to these agencies in sufficient time for review and comment, and to the CPM for review and approval prior to the proposed start of construction and implementation of the plan.

The TCP shall include:

- Routes used for construction-related trips for workers, deliveries, and heavy-haul trucks.
- Location and type of signage warning traffic to use caution and to be aware of construction and demolition vehicles exiting the power plant site.
- Timing of construction-related trips for workers, deliveries, and heavy-haul trucks, with trips scheduled for off-peak hours to the maximum extent possible, and staggered if occurring during the peak hours, meaning that arrival trips do not occur simultaneously, and departure times do not occur simultaneously
- Placement of necessary signage, lighting, and traffic control devices at the project construction site and lay-down areas
- A heavy-haul plan addressing the transport and delivery of heavy and oversized loads requiring permits from the California Department of Transportation (Caltrans), other state or federal agencies, and/or the affected local jurisdictions
- Means of access for emergency vehicles to the project site throughout construction phase

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the TCP to the applicable agencies for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the agencies requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the agencies, along with any changes to the TCP, for CPM review and approval.

TRANS-3 Restoration of All Roads, Easements, and Rights-of-Way

The project owner shall restore all roads, easements, rights-of-way, and any other transportation infrastructure damaged due to project-related construction and demolition activities and traffic. Restoration shall be completed in a timely manner to the infrastructure's original condition. Restoration of significant damage which could cause hazards (such as potholes, deterioration of pavement edges, or damaged signage) shall take place immediately after the damage has occurred. All repairs and road improvements must comply with county requirements.

Prior to the start of site mobilization, the project owner shall notify the relevant agencies, including the city of Fillmore Planning Department, county of Ventura Resource Management Agency Planning Division, and Caltrans District 7, of the proposed schedule for project construction. The purpose of this notification is to request that these agencies consider postponement of any planned public right-of-way repairs or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent activities that cannot be postponed.

Verification: Prior to the start of site mobilization, the project owner shall videotape all public roads, easements, right-of-way segment(s), and intersections along the route construction and infill vehicles would take in the vicinity of the project site. The project owner shall provide the videotapes to the CPM.

If damage to any public road, easement, or right-of-way occurs during construction or demolition, the project owner shall notify the CPM and the affected agency/agencies to identify the sections to be repaired. At that time, the project owner and CPM shall establish a schedule for completion and approval of the repairs. Following completion of any repairs, the project owner shall provide the CPM with letters signed by the affected agency/agencies stating their satisfaction with the repairs.

TRANS-4 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 Ventura county and Caltrans, to obtain all required encroachment permits and comply with all applicable regulations.

Verification: At least 10 days prior to ground disturbance or interruption of traffic in or along any public road, easement, or right-of-way, the project owner shall provide copies of all permit(s), relevant to the affected location(s), received from Caltrans or any other affected jurisdiction/s to the CPM. In addition, the project owner shall retain copies of the issued/approved permit(s) and supporting documentation in its compliance file for a minimum of 6 months after the start of commercial operation.

TRANS-5 Transportation of Hazardous Materials

The project owner shall contract with licensed hazardous materials delivery and waste hauler companies for the transportation of hazardous materials and wastes. The project owner shall ensure compliance with all applicable regulations and implementation of the proper procedures.

Verification: In the Monthly Compliance Reports (MCRs) during construction and demolition, and the Annual Reports during operation, the project owner shall provide the names of the contracted hazardous materials delivery and waste hauler companies used, as well as licensing verification. Licensing verification only needs to be included in the MCRs when a new company is used. If a company's licensing verification has already been submitted in an MCR, it is not necessary to submit it again. Licensing verification must be included in all Annual Reports, even if the company has already been used.

TRANS-6 Federal Aviation Administration Notification

The project owner shall submit the following filings to the Federal Aviation Administration (FAA):

- Form 7460-1, Notice of Proposed Construction or Alteration, regarding the proposed CTG stacks, the entirety of the transmission system, and the use of any construction cranes exceeding 200 feet in height;
- Form 7460-2, Notice of Actual Construction or Alteration, if the FAA deems this form necessary.

The project owner shall comply with any conditions imposed by the FAA on the proposed CTG stacks, transmission system or the use of construction cranes exceeding 200 feet in height. The 'Notice of Proposed Construction or Alteration' determinations from the FAA have an expiration date on which the conclusions are no longer valid, the project owner will need to refile Form 7460-1 for the CTG stacks, transmission system, or the use of construction cranes exceeding 200 feet in height, if this expiration date has passed.

Verification: At least 60 days prior to ground disturbance, the project owner shall submit a copy of the valid FAA Determination of No Hazard to Navigable Airspace regarding the CTG stacks, transmission system, or the use of construction cranes exceeding 200 feet in height to the CPM.

Within 10 days following the date the CTG stack reaches its greatest height, the project owner shall submit to the CPM a copy of the Form 7460-2 submitted to the FAA (if applicable).

TRANS-7 Obstruction Marking and Lighting

The project owner shall install obstruction marking and lighting on the combustion turbine generator (CTG) stack. Lighting on the CTG stack shall consist of one non-blinking red aviation obstruction light consistent with the standards set in FAA Advisory Circular 70/7460-1L, Obstruction Marking and Lighting.

Lighting shall be operational for the life of project operation. Upgrades to the required lighting configurations, types, location, or duration shall be implemented consistent with any changes to FAA obstruction marking and lighting standards.

Verification: At least 60 days prior to the start of construction, the project owner shall submit to the CPM for approval final design plans for the CTG stack that depict the required obstruction marking and lighting.

Prior to the start of plant operation, the project owner shall install and activate permanent obstruction marking and lighting consistent with FAA standards and shall inform the CPM in writing within 10 days of installation and activation.

TRANS-8 Pilot Notification and Awareness.

The project owner shall initiate the following actions to ensure pilots are aware of the project location and potential hazards to aviation:

1. Submit a letter to the Federal Aviation Administration (FAA) requesting a Notice to Airmen (NOTAM) be issued advising pilots of the location of the power plant and recommending avoidance of overflight of the project site. The letter should also request that the NOTAM be maintained in active status until all navigational charts and Airport Facility Directories (AFDs) have been updated.

2. Submit a letter to the FAA requesting a power plant depiction symbol be placed at the power plant site location on the Los Angeles Sectional Chart with a notice to avoid overflight.

3. Submit a request to the Santa Paula Airport Manager to add new remarks to the Arrival and Departure Procedures. The remarks shall identify the location of the power plant and advise pilots to avoid direct overflight as they approach or depart the airport.

4. Submit aerodrome remarks describing the location of the power plant and advising against direct overflight to the:

   a. FAA Airport/Facility Directory – Southwest U.S.

   b. Jeppesen (Airway Manual Services - Western U.S. Airport Directory)

   c. Pilots Guide to California Airports

Verification: Within 60 days following the start of construction, the project owner shall submit to the CPM for review and approval draft language for the letters of request to the FAA, the Santa Paula Airport Manager, and the listed publications. The letters should request a response within 30 days that includes a timeline for implementing the required actions.

Within 60 days after CPM approval of the draft language, the project owner shall submit the required letters of request to the FAA, the Santa Paula Airport Manager, and the identified publications. The project owner shall submit copies of these requests to the CPM. A copy of any resulting correspondence shall be submitted to the CPM within 10 days of receipt. If the FAA, Santa Paula Airport Manager, or the listed publications do not respond within 30 days, the project owner shall contact the CPM.

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APPENDIX TT-1: PLUME THRESHOLD DETERMINATION

Jonathan Fong and Andrea Koch

INTRODUCTION

Staff has historically used an average thermal plume vertical velocity of 4.3 meters per second (m/s) as the threshold for potential impacts to aviation. Staff would prepare a plume velocity analysis and calculate the altitude at which a plume would have an average velocity of 4.3 m/s and conclude that aircraft flying through the plume at this altitude or below could experience turbulence threatening aircraft control.

Staff found that based on recent publications, an average vertical velocity of 4.3 m/s is not an appropriate threshold. The purpose of this appendix is to provide documentation of staff's determination that a 10.6 m/s peak vertical velocity should be considered as the appropriate threshold.

BACKGROUND

The FAA identifies thermal plumes as a potential source of impacts to aviation, but currently does not have an adopted threshold of significance for vertical plume velocities. Staff has relied on a 4.3 m/s threshold which originated from the Australian Government Civil Aviation Safety Authority (CASA) Advisory Circular, AC 139-05 (0), "Guidelines for Conducting Plume Rise Assessments", dated June 2004. The Advisory Circular stated that "Aviation authorities have established that an exhaust plume with a vertical gust in excess of 4.3 m/s may cause damage to an aircraft airframe, or upset an aircraft when flying at low levels" (FAA 2006). However, recent publications state that 4.3 m/s represents light turbulence, which would only result in "rhythmic bumpiness and momentary changes in altitude and attitude" if an aircraft flew through the plume (AGBM 2007, Table 10.1). This would not be a significant impact to aircraft. Furthermore, the origin of CASA's 4.3 m/s threshold is unknown, and CASA was unable to verify the source of the threshold (TRB 2014, page 55).

REVISED PLUME THRESHOLD

Plume Threshold Determination Table 1 is a modified version of Table10.1 in the Australian Government Bureau of Meteorology's "Manual of Aviation Meteorology", Second Edition, dated 2007. A 10.6 m/s vertical gust corresponds to the initial threshold of severe turbulence, which would result in "large abrupt changes in altitude and attitude, and momentary loss of control" (AGBM 2007).

Plume Threshold Determination Table 1

Intensity	Airspeed fluctuations (knots)	Vertical gusts (feet per second)	Vertical gusts (meters per second)	Aircraft reaction
Light	5 - 14.9	5 - 20	1.5 - 6.1	Rythmic bumpiness. Momentary changes in altitude and attitude.
Moderate	15 - 24.9	20 - 35	6.1 - 10.6	Rapid bumps or jolts. Appreciable changes in altitude and attitude.
Severe	=> 25	35 - 50	10.6 - 15.2	Large abrupt changes in altitude and attitude. Momentary loss of control.
Extreme		> 50	> 15.2	Practically impossible to control aircraft. May cause structural damage.

Source: *Manual of Aviation Meteorology*, Table 10.1, Second Edition, 2007, Australian Government Bureau of Meteorology,

The FAA-sponsored "Guidebook for Energy Facilities Compatibility with Airports and Airspace" also includes information supporting the use of 10.6 m/s as a screening threshold (TRB 2014). The 10.6 m/s screening threshold is also referenced in CASA's November 2012 Advisory Circular as a screening threshold for severe turbulence to aircraft (CASA 2012). The 2012 circular is an update to the AC 139-05 (0) CASA Advisory Circular which staff has historically referenced as the origin of the 4.3 m/s threshold.

When considering the potential effects of thermal plumes in terms of G-load, 1G is considered as the start of severe turbulence and corresponds with the severe turbulence threshold of 10.67 m/s (AGBM 2007). The FAA-sponsored "Guidebook for Energy Facilities Compatibility with Airports and Airspace" (TRB 2014) supports the 1G threshold (and thus, the corresponding threshold of 10.67 m/s) as the start of severe turbulence. The Guidebook also states on page 52 that NOAA defines severe turbulence as starting at 1G. Finally page 56 of the Guidebook references a MITRE study's conclusion that an appropriate safety threshold is the potential for a plume to create more than a 1G vertical acceleration on an aircraft.

In light of the literature cited above, staff determines the threshold of a peak vertical velocity of 10.6 m/s to be appropriate.

PEAK VERTICAL VELOCITY

It should be noted that while staff previously used a threshold representing a plume's average vertical velocity (4.3 m/s), staff's new threshold of 10.6 m/s represents a plume's peak vertical velocity.

The problem with using an average vertical velocity as a threshold is that it is an average across the entire plume and does not represent the worst-case velocity that could be encountered within the plume. The peak vertical velocity for a plume, which generally occurs toward the middle of the plume, can be up to twice the average vertical velocity at a particular altitude. Using staff's past analysis method as an example, at the altitude where the average vertical velocity was 4.3 m/s across the entire plume, the peak velocity at that altitude could be twice that, at approximately 8.6 m/s toward the middle of the plume. Examining staff's new threshold as another example, at the altitude where the plume's peak vertical velocity would be 10.6 m/s, the average vertical velocity would be 5.3 m/s, slightly higher than the previously used threshold of 4.3 m/s average vertical velocity. For more information on how a thermal plume's peak velocity is calculated, see **Appendix TT-2**.

CONCLUSION

Based on review of the recent publications discussed above, staff will use 10.6 m/s peak vertical plume velocity as the new threshold. The altitude at which a plume would have a peak vertical velocity of 10.6 m/s would be the same altitude at which a plume would have an average vertical velocity of half that, 5.3 m/s.

REFERENCES

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APPENDIX TT-2: PLUME VELOCITY ANALYSIS

Joseph Hughes, P.E.

INTRODUCTION

The following provides assessment of vertical plume velocities for the Mission Rock Energy Center's (Mission Rock) combustion turbine generators (CTGs) exhaust stack plumes. 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 and expected operations. The purpose of this appendix is to provide documentation of the method used to estimate worst-case vertical plume velocities to assist evaluation of the project's impacts on aviation safety in the vicinity of the proposed facility.

PROJECT DESCRIPTION

Mission Rock would be a natural gas-fired, simple-cycle combustion turbine electrical generating facility rated at a nominal generating capacity of 275 megawatts (MW), co-located with battery units for the storage of electricity that can deliver an additional 25 MW. The facility would consist of five LM6000 PG Sprint CTGs, a six-cell wet surface air cooler (wet SAC) used for turbine inlet air chilling, and a diesel-fueled fire pump engine. Staff analysis of the wet SAC and fire pump engine showed velocities well below the threshold for concern. Therefore, this appendix provides the expected worst-case vertical plume velocities from the five CTGs only.

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 Mission Rock 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 stack (m)

z_v= virtual source height (m)

V_{exit}= initial stack velocity (m/s)

D = stack diameter (m)

T_a= ambient temperature (K)

T_s= stack temperature (K)

g = acceleration of gravity (9.8 m/s^2)

Equation (1) is solved for V at any given height above the stack (and then added to stack height to obtain height above ground) that is above the momentum rise stage for single stacks (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 (F_o) 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 from calm conditions.

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).

COMBUSTION TURBINE DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for the CTG stack exhausts are provided in **Plume Velocity Table 1**. The applicant provided operating parameters for 30, 39.4, 59, 61, 76, 79.2 and 96 degree Fahrenheit (ºF) cases at CTG loads of 25, 50, 75, and 100 percent (%); however the worst-case vertical plume velocities occur during full load operations. Therefore, the exhaust operating parameters shown correspond to full load operation for the corresponding ambient conditions. **Plume Velocity Table 1** presents the exhaust parameters for the low, medium, and high ambient temperature cases.

Plume Velocity Table 1
Gas Turbine Exhaust Parameters

Parameter	Combustion Turbine Generators		
Number of CTG Stacks	5		
Stack Heights (ft)	60 (18.29 meters)		
Stack Diameters (ft)	12 (3.66 meters)		
Distance Between Stacks (ft)	88[a] (26.82 meters)		
CTG Load (%)	100		
Ambient Temperature (°F)	30	61	96
Ambient Relative Humidity (%)	30	60	30
Exhaust Temperature (°F)	867	870	869
Exhaust Velocity (ft/s)	102.6 (31.27 m/s)	103.1 (31.42 m/s)	105.2 (32.06 m/s)

a. AFC Figure 2.1-1 shows that the distance between stacks for Unit A and Unit B is 88 feet; the distance between stacks for Unit B and Unit C is 101.5 feet; the distance between stacks for Unit C and Unit D is 88 feet; and the distance between stacks for Unit D and Unit E is 110 feet. The average distance between the five turbine stacks is approximately 97 feet. Staff chose the shortest distance between any two turbine stacks (88 feet) to account for plume merging affects and conservatively assess thermal plume impacts.

Source: CAL 2015 (TN207151-1), Appendix 5.1A, Attachment 5.1A-1.
Notes:

PLUME VELOCITY CALCULATION RESULTS

Staff calculated plume average vertical velocities for each operating case shown in **Plume Velocity Table 1** for the CTGs and determined the worst-case predicted plume velocities occurred during the 30 ºF ambient condition at 100 percent load. This is because the difference in ambient temperature and gas turbine exhaust temperature is the greatest for this condition causing the plume to be more thermally buoyant. Staff's calculated plume average velocity values are provided in **Plume Velocity Table 2**. The combined stack velocities are calculated by combining adjacent stacks per Equation 5.

Plume Velocity Table 2
CTGs Worst-Case Predicted Plume Velocities (m/s)[a]

CTGs – 30 °F, 100% Load			
Height Above Ground (ft)	**Plume Diameter (ft)**	**Number of Merged Stack Plumes[b]**	**Plume Velocity (m/s)**
300	67.38	1	6.84
400	99.38	1.27	6.29
500	131.38	1.63	6.07
600	163.38	1.99	5.92
700	195.38	2.36	5.81
800	227.38	2.72	5.72
900	259.38	3.08	5.64
1000	291.38	3.45	5.58
1100	323.38	3.81	5.52
1200	355.39	4.17	5.48
1300	387.39	4.54	5.43
1400	419.39	4.90	5.39
1500	451.39	5	5.29
1600	483.39	5	5.17
1700	515.39	5	5.06
1800	547.39	5	4.96
1900	579.39	5	4.86
2000	611.39	5	4.78

a. The Traffic and Transportation section describes a plume average vertical velocity of 5.3 m/s to be the critical velocity of concern to light aircraft. 1 m/s is equal to 3.2808 ft/s, therefore 5.3 m/s is equal to 17.39 ft/s.

b. Merged stacks were calculated by adding the plume diameter to the stack diameter and dividing by the distance between stacks.

Source: Staff calculations.
Notes:

As explained in the Traffic and Transportation Appendix TT-1, a plume average vertical velocity of 5.3 m/s has been determined by staff to be the critical velocity of concern to light aircraft. FAA regulations state that an aircraft may not be operated below an altitude of 500 feet when flying over other than congested areas, or 1,000 feet above the highest obstacle when flying over congested areas (14 C.F.R., § 91.119). Because Mission Rock would be located in a congested area, staff identified plume average vertical velocities at 1,000 feet (values are also shown in **Plume Velocity Table 2** at 500 feet). As shown in **Plume Velocity Table 2**, the CTGs exhaust plumes at 1,000 feet above ground is estimated to be 5.58 meters per second (m/s). The CTGs exhausts plume average vertical velocity is calculated to drop below 5.3 m/s at a height of approximately 1,490 feet.

The velocity values listed above in **Plume Velocity Table 2** are plume average velocities across the area of the plume. The maximum plume velocity, based on a normal Gaussian distribution, is two times the plume average velocities shown in the table.

WIND SPEED STATISTICS

Since the Spillane approach method used by staff is limited to calm wind conditions, the frequency of occurrence of calm wind conditions needs to be evaluated for the project site area. However, calm wind statistics data is not needed as input for the plume modeling itself. The Mission Rock Preliminary Staff Assessment used meteorological data collected at the Camarillo Airport Automated Surface Observation Station (CAL2017a, TN: 215570).

Wind roses and wind frequency distribution data was collected at the Camarillo Airport for years 2011 through 2015. Calm winds for the purposes of the reported monitoring station statistics are those hours with average wind speeds below 0.5 m/s. The data shows that calm winds occurred 1.05 percent of the time and the average wind speed was 2.92 m/s. Calm/low wind speeds conditions averaging an hour or longer appear to be infrequent in the site area.

The Spillane approach method assumes calm winds, which would allow buoyant thermal plumes to have a worst-case average plume velocity as shown in **Plume Velocity Table 2**. The calm wind condition basis represents the worst-case conditions, and is considered to be conservative; the vertical velocities will decrease substantially as wind speeds increase from calm conditions.

CONCLUSIONS

The CTG exhausts plume average vertical velocity for the five LM6000 is calculated to drop below 5.3 m/s at a height of approximately 1,490 feet. The vertical velocities from the turbine exhausts at given heights above the stacks decrease as wind speeds increase. These low wind speed conditions lasting an hour or more occur only 1.05 percent of the time. Additionally, shorter periods of dead calm winds, lasting long enough to increase the vertical plume average velocities to heights up to peak heights, can also occur during hours with low average wind speeds.

The reader should refer to the Traffic and Transportation Section for a discussion of impacts to aviation.

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TRAFFIC AND TRANSPORTATION - FIGURE 1

Mission Rock Energy Center - Regional Traffic and Transportation

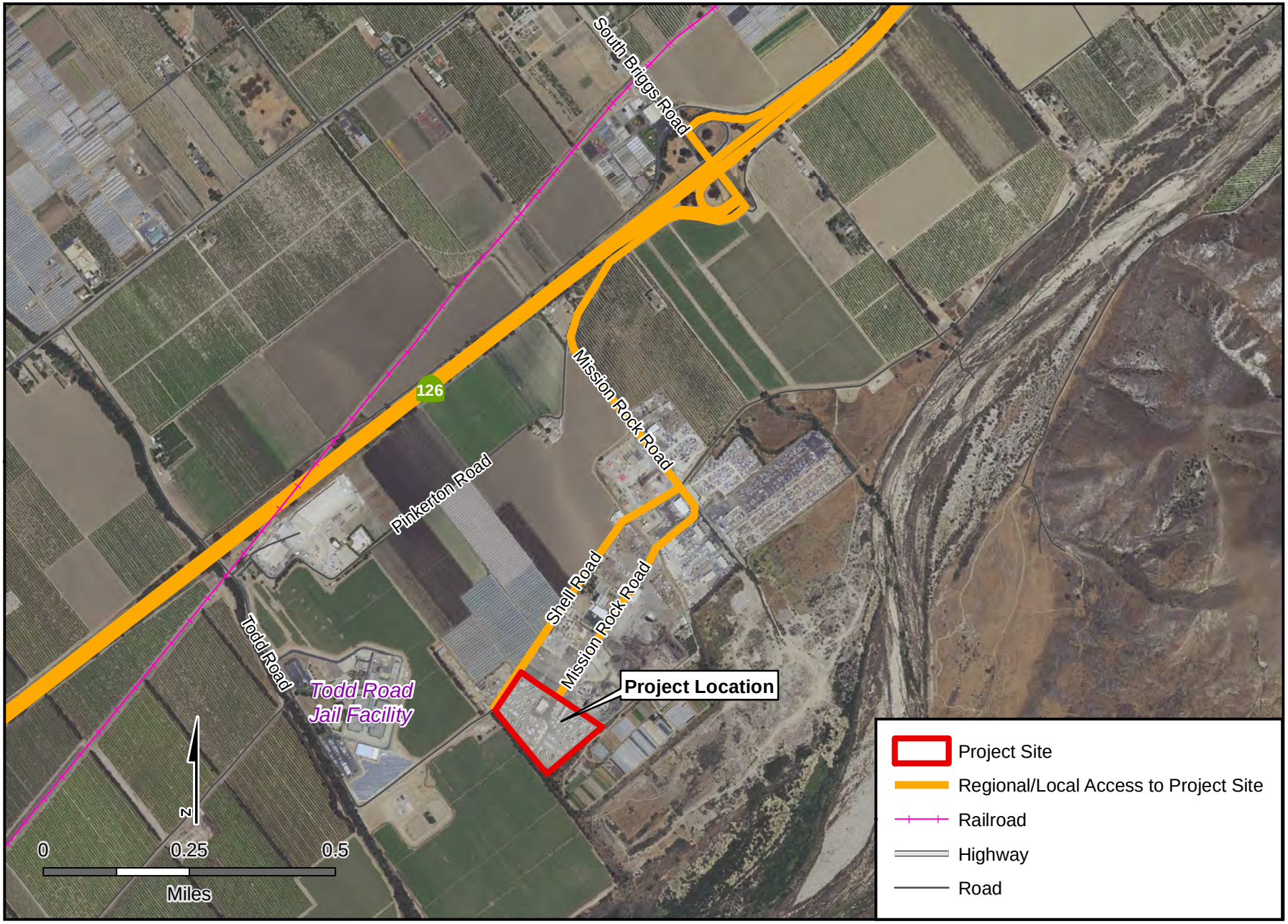
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data

TRAFFIC AND TRANSPORTATION - FIGURE 2

Mission Rock Energy Center - Local Traffic and Transportation Setting



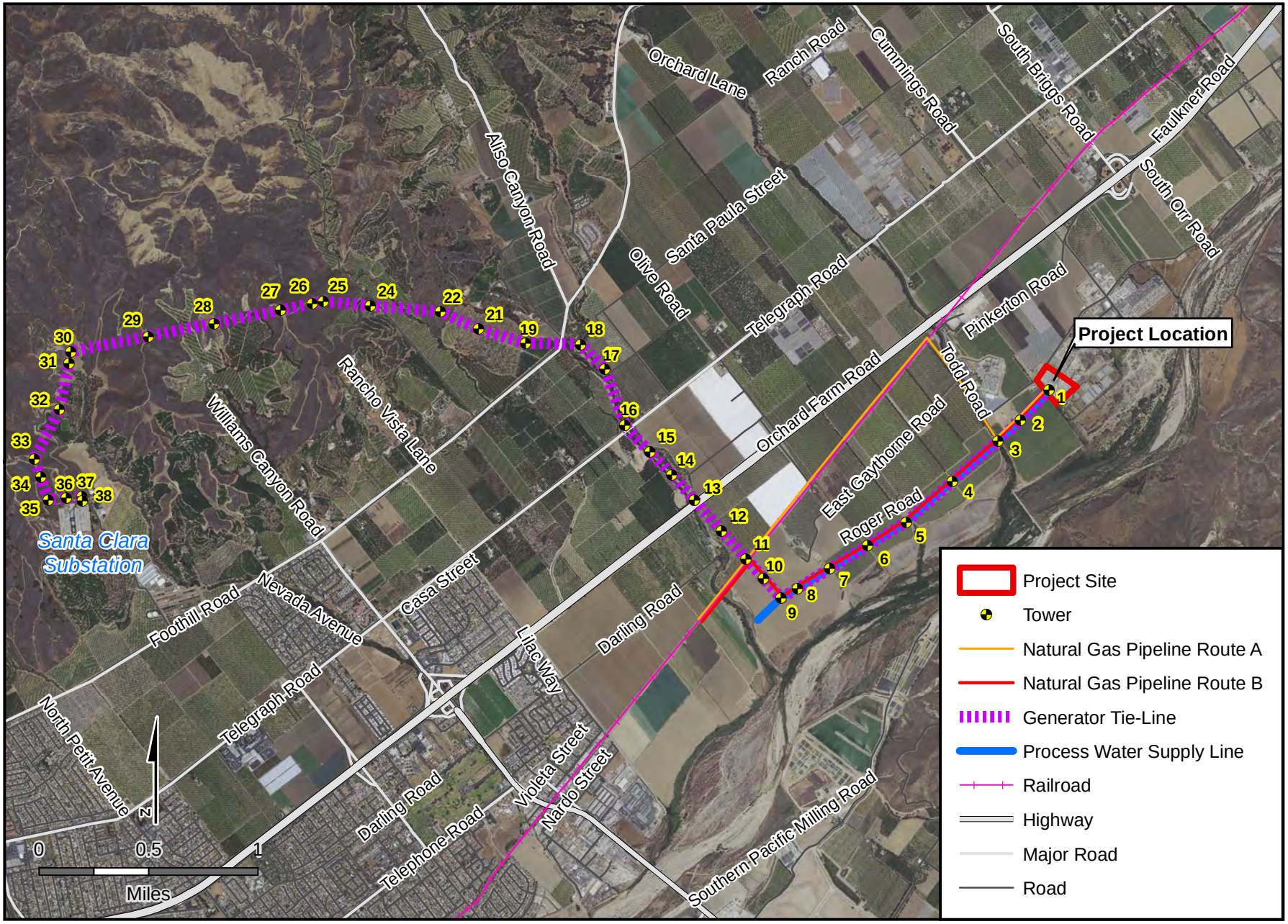
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data

TRAFFIC AND TRANSPORTATION - FIGURE 3

Mission Rock Energy Center - Transmission System



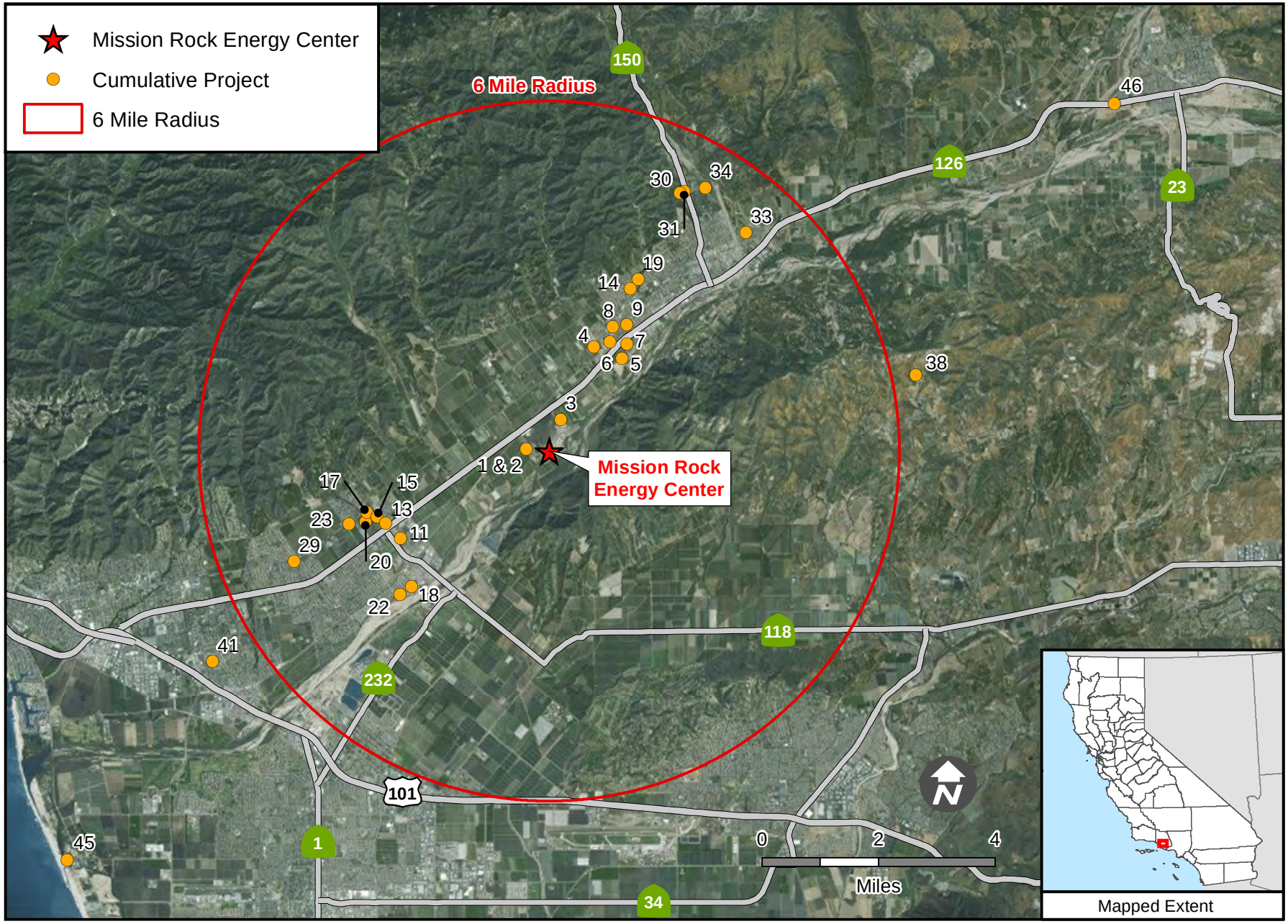
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, California Department of Transportation Data, CH2M

TRAFFIC AND TRANSPORTATION - FIGURE 4

Mission Rock Energy Center - Cumulative Projects



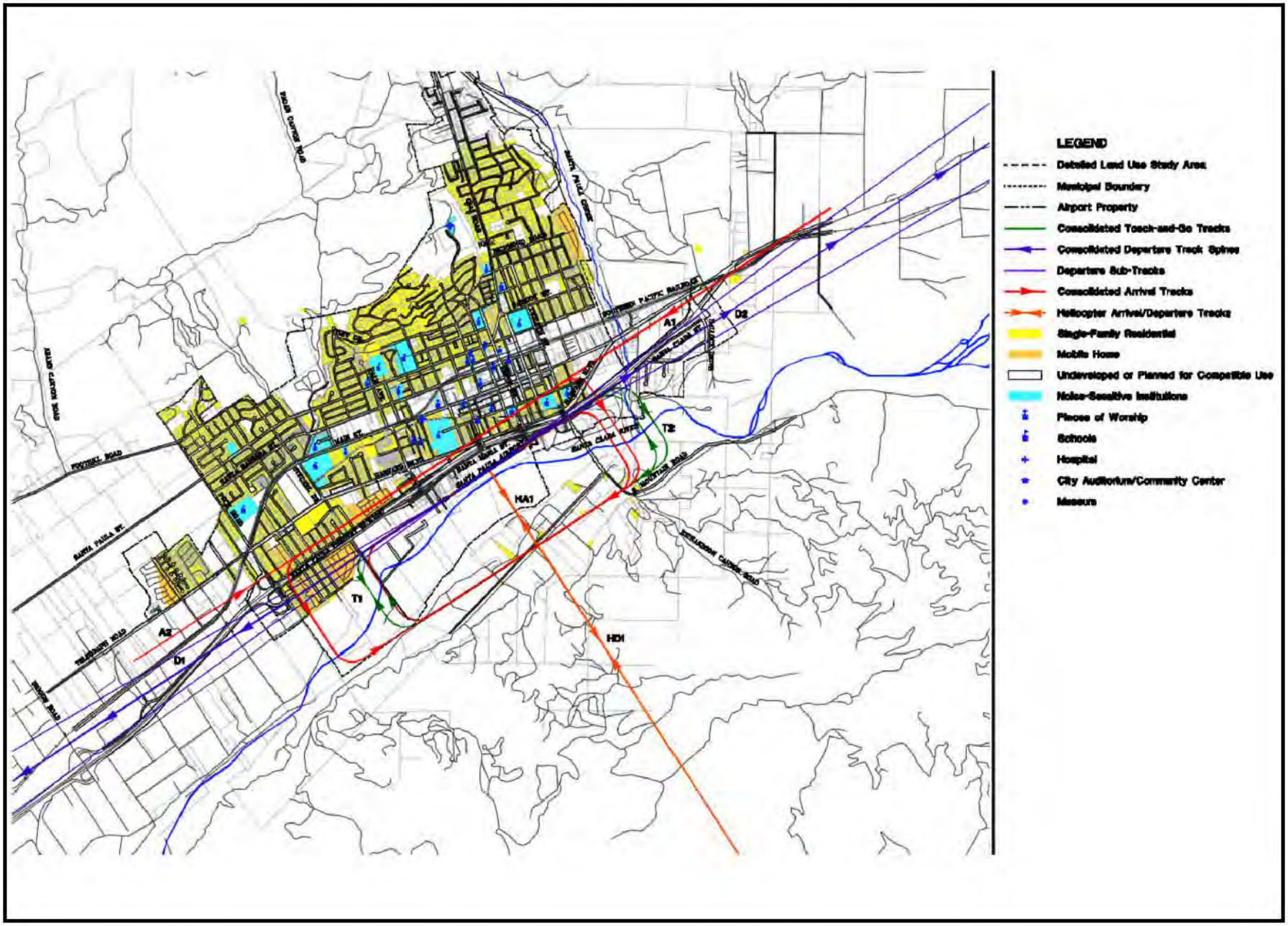
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, National Geographic

TRAFFIC AND TRANSPORTATION - FIGURE 5

Mission Rock Energy Center - Santa Paula Airport Generalized Flight Tracks



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Ventura County Comprehensive Airport Land Use Plan

TRANSMISSION LINE SAFETY AND NUISANCE

Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The applicant proposes to build, own, and maintain a new 6.6-mile, single-circuit 230-kilovolt (kV) transmission line to connect the proposed Mission Rock Energy Center (Mission Rock) to the existing Southern California Edison (SCE's) Santa Clara Substation to the west. The proposed project location was chosen in part for its proximity to this substation. Since this 230-kV tie-line would be operated within the SCE service area, it would be designed, constructed, operated, routed, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards (LORS). The chosen route will run through citrus orchards and other agricultural areas with no nearby residences, minimizing the potential for the residential electric and magnetic field exposures which have been of some health concern. With the four proposed conditions of certification, any safety and nuisance impacts from construction and operation of the proposed line would be less than significant.

INTRODUCTION

The purpose of this Preliminary Staff Assessment (PSA) is to assess the transmission line design and operational plan for the proposed Mission Rock Energy Center (Mission Rock or the project) to determine whether its related field and non-field impacts would constitute a significant environmental hazard in the area around the proposed route. All related health and safety laws, ordinances, regulations, and standards (LORS) are currently aimed at minimizing such hazards.

Staff's analysis focuses on the following issues, taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The federal, state, and local laws and policies in the next section apply to the control of the field and non-field impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The LORS and practices listed in **TLSN Table 1** have been established to maintain impacts below levels of potential environmental significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following table summarizes the LORS applicable to this facility. These LORS are evaluated in the remainder of this section.

Transmission Line Safety and Nuisance (TLSN) Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description	Mission Rock Consistency
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.	**Compliant.** The line would not pose an aviation hazard on the basis of height or distance from local airports. The applicant intends to file a "Notice of Proposed Construction or Alteration" with the FAA as is normal industry practice. See the Aviation Impacts discussion in the **Traffic and Transportation** section.
FAA Advisory Circular No. 70/7460-1L (2015), "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.	**Compliant.** Although staff does not regard the line as an aviation hazard, the applicant intends to file a "Notice of Proposed Construction or Alteration" with the FAA for a hazard assessment.
FAA Advisory Circular 70/7460-1L, "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.	**Compliant.** Since the line would not pose an aviation hazard, staff does not recommend mitigation.
Interference with Radio Frequency Communication		
Federal		
Title 47, CFR, section 15.205, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio- frequency communication.	**Compliant.** Since the Mission Rock 230-kV generation tie line is rated at less than 345 kV and would be located away from inhabited areas, it is unlikely that project- related radio-

Applicable LORS	Description	Mission Rock Consistency
		frequency interference would occur. Therefore, staff does not recommend any mitigation.
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.	**Compliant.** The project owner intends to construct the 230-kV transmission line according to the requirements of CPUC's GO-52. Condition of Certification **TLSN-1** ensures compliance.
Hazardous and Nuisance Shocks		
State		
California Public Utilities Commission (CPUC) General Order 95 (GO-95), "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.	**Compliant.** The project owner intends to construct the 230-kV transmission line according to the requirements of CPUC GO-95. Condition of Certification **TLSN-1** ensures compliance.
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.	**Compliant.** Implementing the CPUC GO-95-related measures against direct contact with the energized line would serve to minimize the risk of hazardous shocks. Conditions of Certification **TLSN-1** and **TLSN-3** ensure compliance.
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.	**Compliant.** Condition of Certification **TLSN-3** would ensure proper grounding for the line.
Electric and Magnetic Fields		
State		
GO-131-D, CPUC "Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California"	Specifies application and noticing requirements for new line construction including electric and magnetic field (EMF) reduction.	**Compliant.** The project owner intends to submit proof of compliance with CPUC GO-131-D to the compliance project manager, as required by Condition of Certification **TLSN-1**.
CPUC Decision D.93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.	**Compliant.** The project would be designed according SCE's EMF-reducing guidelines for similar SCE lines in the service area. Condition of Certification **TLSN-1** would allow the line to be designed accordingly.

Applicable LORS	Description	Mission Rock Consistency
CPUC Decision D.06-01-042	Re-affirms CPUC EMF Policy in D.93-11-013.	**Compliant.** The applicant intends to design the project line to reflect the same EMF reduction policy established through CPUC Decision D.93-11-013. This would be accomplished through the requirements of **TLSN-1.**
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.	**Compliant.** Designing the proposed project transmission lines according to existing SCE field strength-reducing guidelines, as required by Condition of Certification **TLSN-1**, would ensure compliance with the ANSI/IEEE requirements for EMF management.
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.	**Compliant.** The applicant's intended compliance with Title 14, California Code of Regulations, Sections 1250-1258, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area along the route

SETTING AND EXISTING CONDITIONS

The proposed 275-megawatt (MW) (nominal net) Mission Rock project would be located on a 9.79-acre site at 1023 Mission Rock Road west of the city of Santa Paula in unincorporated Ventura County, California. The proposed site is a paved-over land parcel zoned for industrial uses and currently used as an industrial park for storage of boats and recreational vehicles. The electric power from Mission Rock would be transmitted to the area power grid using a generator-tie line running southwest to its connecting point at Southern California Edison's (SCE's) 230-kV Santa Clara Substation. The proposed route would run from Mission Rock's switchyard through citrus orchards and other agricultural areas with no nearby residents. The proposed Mission Rock location was chosen in part for its proximity to the substation (CAL 2015a, p. 3-1)

PROJECT DESCRIPTION

As discussed by the applicant (CAL 2015a, p. 2-9), the proposed Mission Rock transmission line would be a single-circuit 6.6-mile-long 230-kV tie line extending to connect the on-site switchyard to the proposed take-off structure from which it would extend westward and north to the Santa Clara Substation. The power would be generated by the facility's five combustion turbine generators (CTGs) and then stepped up using three 13.8/230-kV step-up transformers to support connection to the local 230-kV network. The proposed 230-kV single-circuit transmission scheme would be designed and constructed in accordance with California Public Utilities Commission (CPUC) General Order (GO) 95, “Rules for Overhead Line Construction” and other applicable state and local codes (CAL 2015a, p. 3-9).

The 230-kV single-circuit line for the project would be a direct intertie between Mission Rock and SCE’s transmission system. The line would be installed on 36 towers of heights varying from 79.9 feet to 200 feet above ground level. From the facility switchyard, the line would run west through agricultural areas, turning northwest, crossing the Santa Clara Valley, and passing over low hills to the north and connecting to the Santa Clara Substation as do several other area transmission lines. The line would be located within its own 75 ft.-wide right-of-way and would, in some sections, run parallel to existing lines (CH2M 2016d, p.12).

The applicant would own, operate, and maintain the proposed line from the facility up to the first point of interconnection with SCE’s transmission system. SCE would own, operate, and maintain the facilities beyond the H-frame take-off structure. The absence of residences in the area around the route should minimize the health-based concern about residential exposure to electric and magnetic fields.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Aviation Safety

For Mission Rock, any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The requirements of the LORS in **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable airspace. These requirements also establish the criteria for determining when to notify the (FAA) about such hazards. For example, FAA notification is required in cases of structures over 200 feet above ground level, or if the structure were to be less than 200 feet in height but located within the restricted airspace in the approaches to public or military airports and heliports. Moreover, for airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area that extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways of 3,200 feet or less, the restricted airspace is defined as a space that extends 10,000 feet from the runway. For heliports, the restricted space is an area that extends 5,000 feet (0.8 nautical miles) from the landing site (CH2M2016b, pg. 5-27), (CAL2015a, Sec. 5.12.2.5)

The heights of the supports for the proposed 230-kV Mission Rock line would vary from 79.9 ft. to the 200 ft. of potential concern to the FAA (CAL 2015a, p 3-1, and Table 3-1). Since the use of these supports would result in a line not taller than the 200-ft FAA concern threshold, staff agrees with the applicant that FAA's hazard review would not flag the line as an aviation hazard. The applicant intends to file a "Notice of Proposed Construction or Alteration" (Form 7640) for all 36 support structures even as they note the presence of lines of greater heights in the area. Staff does not recommend a related condition of certification.

The closest public airfield to the Mission Rock line is the Santa Paula Airport which is a general aviation airport with a single runway approximately 3.4 miles away placing the line outside the airport's restricted air space.

Staff has thus assessed the potential for an aviation hazard with regard to: (a) the height of the proposed project transmission line, and (b) distances from identified runways. Staff concludes that the transmission line would not pose a significant collision hazard to area aviation. The applicant agrees with staff but still intends to file an FAA "Notice of Proposed Construction or Alteration" (Form 7640) as is usual industry practice.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation. It is produced by the physical interactions of line electric fields. More specifically, such interference is due to radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as corona *discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. Corona from a transmission line may result in radio and television reception interference, audible noise, light, and production of ozone. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication.

Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts would therefore be minimized by reducing the line electric fields and by locating the line away from inhabited areas.

The Mission Rock transmission line would be built and maintained according to best practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345 kV and above, and not for 230-kV lines such as the proposed line. Since the proposed Mission Rock generation-tie line is rated at less than 345 kV and would be located within a route without nearby residents (CAL 2015a, p. 3-7), it is unlikely that its operation would have any potential for effects on radio or television reception and related impacts. Given such potential lack of impacts, staff does not recommend any related condition of certification.

Audible Noise

Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line's electric field, the potential for perception would be assessed from estimating the field strengths during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV, or higher. Audible noise is, therefore, not generally expected at significant levels from lines of less than 345 kV as proposed for Mission Rock. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing that the fair-weather audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since noise-reducing designs would be used for the proposed line, staff does not expect operation to add significantly to current background noise levels in the project area.

Noise limits are not mandated by federal or state regulations for modern transmission lines. Audible noise is instead limited through construction or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. For an assessment of the noise from the proposed project and related facilities, please refer to staff's analysis in the **Noise and Vibration** section of this staff assessment.

Fire Hazards

The fire hazards addressed in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between a line and nearby trees and other combustible objects.

The requirements of the existing SCE fire prevention and suppression program would be implemented for the proposed project line. The applicant would comply with Title 14, CCR, Section 1250, Article 4, which establishes fire prevention standards for electric power generation facilities (CAL 2015a, p. 3-10). Also, GO-95 establishes rules and guidelines for transmission line construction (CAL 2015a, p. 3-10), including clearances from other manmade and natural structures, and tree-trimming requirements to mitigate fire hazards. Therefore, the applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Although the new line would be located within its own new right-of-way, Conditions of Certification **TLSN-1** and **TLSN-2** are recommended to ensure compliance with these program requirements.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death. Hazard shocks remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from

compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

Potentially hazardous shocks could result from electrical faults from the new Mission Rock equipment, the generator tie-line, or the SCE high-voltage transmission system. The new Mission Rock 230-kV generator tie-line would be designed in accordance with applicable LORS. Implementing the GO-95-related measures against direct contact with the energized line would serve to minimize the risk of hazardous shocks. Because the line would be constructed in conformance with the requirements of CPUC GO-95 and Title 8 California Code of Regulations (CCR) 2700, hazardous shocks are unlikely to occur as a result of the project's construction and operation (CAL 2015a, p 3-10). Staff's recommended Conditions of Certification **TLSN-1** and **TLSN-3** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices.

For the proposed project line, the owner would be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way. Staff recommends Condition of Certification **TLSN-3** to ensure such grounding occurs for Mission Rock.

Electric and Magnetic Field (EMF) Exposure

Both electric and magnetic fields are created whenever electricity flows, and exposure to them together is generally referred to as electric and magnetic field (EMF) exposure. There is general public concern regarding the possibility of health effects from EMF exposure.

The transmission interconnection and other electrical devices constructed as part of the project would generate EMF when in operation. These fields are typically measured near ground level, where they are encountered by people. To the extent they occur, EMF could impact receptors on the properties adjacent to the project site. Since the Mission Rock line would be located in its own right-of-way, there would be little long-term public exposure to the generated fields.

Electric Fields

Electric fields around transmission lines are produced by differences in voltage (i.e., electrical charges) on the energized conductor. The electric field strength is measured in volts per meter (V/m). Electric fields are easily shielded against or weakened by conducting objects such as trees and buildings. Increased voltage produces a stronger electric field, but increased distance from the sources decreases the strength.

Magnetic Fields

Magnetic fields around transmission lines are produced when electric current (measured in amperes) flows. Magnetic fields are measured in gauss (G) or tesla (T). Unlike electric fields, magnetic fields are not easily shielded against or weakened by most materials. Magnetic field strength is directly proportional to the current; that is, increased amperes produce a stronger magnetic field. Like electric fields, increased distance from the sources decreases its strength.

The strengths of both the electric field and magnetic field are inversely proportional to the distance from the conductors. Thus, the EMF strength declines as the distance from the conductor increases.

Human Health Risk Assessment Findings

Human health risk assessments for EMF continue to be conducted to determine if there are biological and other hazards from EMF exposure and what the potential health impacts might be.

Although there are several studies on the health effects of EMF, there are no consistent conclusions from human studies (epidemiological and/or clinical) and animal studies. In 1996, the World Health Organization (WHO) launched a large, multidisciplinary research effort (i.e. the International EMF Project) to bring together current knowledge and available resources including 25,000 articles which had been published over the past 30 years. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. The conclusions from WHO and other sources are summarized as follows:

- **Effects on general health:** Scientific evidence does not support the notion of a link between the reported symptoms (including headaches, anxiety, suicide and depression, nausea, fatigue, and loss of libido) and exposure to electromagnetic fields.
- **Effects on pregnancy outcome:** The overall weight of evidence shows that exposure to fields at typical environmental levels does not increase the risk of any adverse outcome such as spontaneous abortions, malformations, low birth weight, and congenital diseases. There have been occasional reports of associations between health problems and presumed exposure to electromagnetic fields, such as reports of prematurity and low birth weight in children of workers in the electronics industry, but these have not been regarded by the scientific community as being necessarily caused by the field exposures.

- **Cataracts:** General eye irritation and cataracts have sometimes been reported in workers exposed to high levels of radio-frequency and microwave radiation, but animal studies do not support the idea that such forms of eye damage could be produced at levels that are not thermally hazardous. There is no evidence that these effects occur at levels experienced by the general public.
- **Cancers:** Despite many studies, the evidence for any effect remains highly controversial. However, it is clear that if electromagnetic fields do indeed have an effect on cancer, then any increase in risk would be extremely small. The results to date contain many inconsistencies, but no large increases in risk have been found for any cancer in children or adults. The U. S. National Institute of Environmental Health Sciences (NIEHS) also concluded that "A link has not been established between residential EMF exposure and adult cancers, including leukemia, brain cancer, and breast cancer".
- **Childhood leukemia and cancers:** There have been studies showing a weak association between measured fields and childhood leukemia, but it is not clear whether this represents a cause-and-effect relationship or not. A number of epidemiological studies suggest small increases in risk of childhood leukemia with exposure to low frequency magnetic fields in the home. However, scientists have not generally concluded that these results indicate a cause-and-effect relationship between exposure to the fields and disease. Moreover, animal and laboratory studies have failed to demonstrate any reproducible effects that are consistent with the hypothesis that fields cause or promote cancer. After reviewing all the data, NIEHS also concluded in 1999 that the evidence was weak, but that it was still sufficient to warrant limited concern. Other than leukemia, the present available series of studies indicates no association between EMF exposure and childhood cancers (NIEHS 2002).
- **Electromagnetic hypersensitivity and depression:** Some individuals report hypersensitivity (examples: aches and pains, headaches, depression, lethargy, sleeping disorders, and even convulsions and epileptic seizures) to electric or magnetic fields. There is little, scientific evidence to support the association between electromagnetic hypersensitivity and electromagnetic field exposure; nor is there any accepted biological mechanism to explain such hypersensitivity.

Based on the available evidence as evaluated by WHO and NIEHS, staff has determined that there is not sufficient evidence that such fields pose a significant health hazard to exposed humans.

EMF Exposure Guidelines and Policies

There are no health-based federal regulations or industry codes specifying environmental limits or maximum acceptable levels of EMF from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the California Public Utilities Commission (CPUC), to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff therefore considers it appropriate, in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the individual would likely be small;
- The most biologically significant types of exposures have not been established;
- Most health concerns are about the magnetic field; and
- There are measures that could be employed for field reduction, but they are not recommended because they would affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State's Approach to Regulating EMF Exposures

In 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 design to reduce field strength or relocation to reduce exposure. Publicly owned utilities outside the jurisdiction of CPUC voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

In 2006, the CPUC revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings specified in Decision D.06-01-042 did not point to a need for significant changes to existing field management policies. Instead, D.06-01-042 re-affirmed D.93-11-013 by stating that health hazards from exposures to EMF had not been established and that state and federal public health regulatory agencies had determined that setting numerical exposure limits would not be appropriate at the time. The CPUC also re-affirmed its past conclusions and required the existing no-cost and low-cost precaution-based EMF policy to be continued. The CPUC requirement is that such field reductions are to be made only in connection with new or modified lines in any of the utilities' service areas. Each utility complies by establishing its own EMF-reducing measures and incorporating such measures into the designs for all new or upgraded power lines and related facilities.

Since there are no residences in the immediate vicinity of the proposed project's transmission line, there would not be the long-term residential EMF exposures mostly responsible for the health concerns noted earlier. The only project-related EMF exposures of potential significance would be the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the line. These types of exposures are short term and well understood as not significantly related to the health concern.

In keeping with CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the safety and EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures would impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on transmission line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values could be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths could be estimated for any given design using established procedures.

Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors, and, in the case of magnetic fields, amount of current in the line.

Since the CPUC currently requires that most new lines in California be designed according to safety and EMF-reducing guidelines of the electric utility in the service area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project line according to existing SCE field strength-reducing guidelines would constitute compliance with the CPUC requirements for line field management.

Industry's and Applicant's Approach to Reducing EMF Exposures

The present focus is on the magnetic field. This is because unlike electric fields, magnetic fields would penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of health concerns. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case.

As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields than those from high-voltage lines while using some common household appliances (National Institute of Environmental Health Sciences 1998). The difference between these types of field exposures is that the

higher-level, appliance-related exposures are of short-term duration, while the exposures from power lines are lower level, but of long-term duration. Scientists have not established which of these exposure types would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar SCE lines, specific field strength-reducing measures would be incorporated into the proposed line design to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures that could be applied include the following:

- increasing the distance between the conductors and the ground to an optimal level;
- reducing the spacing between the conductors to an optimal level;
- minimizing the current in the line; and
- arranging current flow to maximize the cancellation effects from interacting of conductor fields.

Since as previously noted, the route of the proposed project's transmission line would have no nearby residences, the long-term residential field exposures at the root of the health concern of recent years would not be a significant concern. The field strengths of most significance in this regard would be as encountered at the proposed project site. These field intensities would depend on the effectiveness of the applied field-reducing measures. The requirements in Condition of Certification **TLSN-4** for field strength measurements are intended to assess the applicant's assumed field reduction efficiency.

CUMULATIVE IMPACTS

Operating any given project may lead to significant adverse cumulative impacts when its effects are considered cumulatively considerable. "Cumulatively considerable" means in this context that the incremental field and non-field effects of an individual project would be significant when considered together with the effects of past, existing, and future projects (California Code Regulation, Title 14, section 15130). When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. For the proposed project's tie-line this interaction would occur between the Mission Rock-related fields and the fields from nearby SCE lines. Since the proposed project's tie-line would be designed, built, and operated according to applicable field-reducing SCE guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for SCE lines of similar voltage and current-carrying capacity and not considered environmentally significant in the present health risk-based regulatory scheme. The actual field strengths and contribution levels for the proposed line design would be assessed from the results of the field strength measurements specified in Condition of Certification **TLSN-4**.

COMPLIANCE WITH LORS

As previously noted, current health-risk-driven CPUC policy on EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in the case of Mission Rock is SCE. Since the proposed project's 230-kV tie-line would be designed according to the respective requirements of the LORS listed in **TLSN Table 1**, and operated and maintained according to current SCE guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis.

The actual contribution to the area's field exposure levels would be documented for the proposed route from results of the field strength measurements required in Condition of Certification **TLSN-4**.

ENVIRONMENTAL JUSTICE

Environmental Justice Figure 1 in the **Environmental Justice** section shows the presence of an Environmental Justice (EJ) population based on race and ethnicity within a six-mile radius of the project. **Environmental Justice Figure 2** and **Table 3** show the presence of an EJ population based on low income. Additionally, census data shows there are approximately 51 agricultural jobs/farm workers within a one mile radius of the project site concentrated north of the project site, and approximately 4,398 agricultural jobs/farm workers within a six mile radius of the project site concentrated primarily northeast and south of the project site (US Census 2014). The presence of such a population alerted staff to the potential for project impacts on the EJ population, including disproportionate impacts from the field and non-field transmission line effects described in this analysis. As staff noted however, the applicant's line design and operational plan and staff's recommended conditions for certification would be adequate to reduce the risk of human effects to less than significant levels. Since the proposed transmission lines would not be installed near residences, there would be no potential for residential electric and magnetic field exposures which have been of some health concern for previous projects. Field and non-fields transmission line impacts are usually within a relatively short distance of the transmission line, no greater than a few hundred feet from the proposed line. Short-term exposures have negligible health concerns causing staff to conclude that there would be no EJ project impacts regarding transmission line safety and nuisance (TLSN).

Given the nature of the impacts and the less than significant level of the impacts, there would be no case of disproportionate TLSN impacts for all populations, including the EJ population and nearby farm workers. Any off-site workers, such as farm workers, would usually be in the vicinity of potential TLSN impacts only for a short period of time. As discussed earlier, short-term exposures have negligible health concerns. With the proposed conditions of certification, staff does not expect there would be any short-term or long-term TLSN impacts on off-site workers. Please refer to the **Environmental Justice** section of this staff assessment for a full explanation of how staff determines the presence of EJ populations.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

To date, staff has received no public or agency comments on the transmission line nuisance and safety aspects of the proposed Mission Rock line and would reply to any such comments received in the Final Staff Assessment (FSA) document for the project.

NOTEWORTHY PUBLIC BENEFITS

Since the proposed tie-in line would pose specific, although insignificant risks of the field and non-field effects of concern in this analysis, its building and operation would not yield any public benefits regarding the effort to minimize any human risks from these impacts.

FACILITY CLOSURE

If the proposed Mission Rock were to be closed and decommissioned, and all related structures are removed as described in the **Project Description** section, the minimal electric shocks and fire hazards from the physical presence of this tie-line would be eliminated. Decommissioning and removal would also eliminate the transmission line's field and non-field impacts assessed in this analysis in terms of nuisance shocks, radio-frequency impacts, audible noise, and electric and magnetic field exposure, and aviation safety. Since the line would be designed and operated according to existing SCE guidelines, these impacts would be as expected for SCE lines of the same voltage and current-carrying capacity and therefore, at levels reflecting compliance with existing health and safety LORS.

CONCLUSIONS

Mission Rock construction and operation, including the one new single-circuit 230-kilovolt (kV) transmission line to connect the proposed Mission Rock to SCE's transmission system, is not expected to result in significant changes in EMF levels, corona, audible noise, hazardous shocks, or radio and television interference. The applicant and staff believe that the line would not pose a line-related collision hazard to area aviation or aircraft. However the height of one of the line supports would reach the 200-foot FAA concern threshold, hence the applicant's intention to file a "Notice of Proposed Construction or Alteration" (Form 7640) for all 36 support structures even as they note the presence of lines of greater heights in the area. Staff does not find it necessary to recommend a related condition of certification or recommend specific location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current SCE guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's GO-95. Compliance with Title 14, California Code of Regulations, Section 1250, would minimize fire hazards while the

use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed Mission Rock 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 residential magnetic exposure would be insignificant for the proposed line given the absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for SCE lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since the proposed project's line would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would be routed within an area with no nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable LORS. With implementation of the four recommended conditions of certification, any such impacts would be less than significant.

Staff's assessment shows that the project would not have significant impacts on the EJ population, including the nearby farm workers, with no disproportionate impacts.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed 230-kV transmission line according to the requirements of California Public Utility Commission's GO- 95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and Southern California Edison's EMF reduction guidelines.

Verification: At least 30 days prior to start of construction of the transmission line or related structures and facilities, the project owner shall submit to the compliance project manager (CPM) a letter signed by a California registered electrical engineer affirming that the line will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that the route of the proposed transmission line is kept free of combustible material, as required under the provisions of GO-95 and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the proposed route and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-3 The project owner shall ensure that all permanent metallic objects within the proposed route are grounded according to industry standards.

Verification: At least 30 days before the line is energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

TLSN-4 The project owner shall measure the maximum strengths of the line electric and magnetic fields at the edge of the right-of-way to validate their assumptions on field strength reduction. These measurements shall be made at assumed points of maximum strengths (a) according to the standard procedures of the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) and (b) before and after energizing. The measurements shall be completed no later than six months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energizing measurements with the CPM within 60 days after completion of the measurements.

REFERENCES

EPRI — Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and Above.

CAL 2015a – Calpine Company (TN 207151-1). Application for Certification, Mission Rock Energy Center Vol. I dated December 30, 2015.

CAL 2015b – Calpine Company (TN207160-1). Application for Certification: Appendices. Mission Rock Energy Center Vol. II. December 30, 2015.

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World Health Organization (WHO), *Electromagnetic fields (EMF)*, <http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>

VISUAL RESOURCES

William Kanemoto

SUMMARY OF CONCLUSIONS

The proposed Mission Rock Energy Center (Mission Rock or project) would not have a substantial adverse effect on visual resources, and would be in conformance with applicable laws, ordinances, regulations, and standards (LORS) pertaining to visual resources, with the effective implementation of the applicant's proposed mitigation measures and staff's proposed conditions of certification.

Site-specific information on proposed project tree removals was requested from the applicant by staff in a data request, but data responses to date lack the specificity needed to fully understand the impacts in various locations, particularly Key Observation Point (KOP) 3. Condition of Certification **VIS-2** calls for site-specific tree surveys and vegetation management plans needed to provide this understanding and to address potential visual issues under a worst-case scenario.

INTRODUCTION

The California Environmental Quality Act (CEQA) requires the California Energy Commission to determine the potential for significant impacts to visual resources resulting from the proposed project. Visual resources are the natural and cultural features of the environment that can be viewed. Visual resources also include "sensitive viewing areas," which are areas consisting of uses such as residential, recreational, travel routes, and tourist destinations, and the people within those use areas, or "sensitive viewers." This analysis focuses on whether Mission Rock would cause significant, adverse visual impacts and whether it would conform to applicable LORS.

Visual Resources Appendix-1 (VR Appendix-1), Visual Resources Terms, Definitions, and Analysis Method, describes Energy Commission staff's methodology used in this analysis, and the "Method and Thresholds for Determining Significance" subsection below describes the thresholds for determining environmental impacts. In accordance with staff's procedure, conditions of certification are proposed as needed to reduce potentially significant impacts to less than significant levels or to the extent feasible, and to ensure LORS conformance, if possible.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Visual Resources Table 1 lists state and local LORS pertaining to aesthetics or preservation and protection of sensitive visual resources applicable to the proposed project.

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

Applicable LORS	Description	Mission Rock Consistency
Federal		
	The project does not involve federal lands or any federal laws related to visual resources.	N/A
State		
None		N/A
Local		
Ventura County General Plan (as amended 2015) 1.7 Scenic Resources	The County Scenic Resources Element identifies Scenic Resource Areas (SRAs), primarily comprising the viewsheds of the county's lakes. Section 1.7 also identifies the viewsheds of designated State and County Scenic Highways as SRAs. The General Plan Resources appendix Section 1.7.3 defines rural or open space areas within ½ mile of an adopted Scenic Highway as constituting a SRA.	There appear to be no currently adopted/designated County Scenic Highways (Resources Appendix Figure 1.7.3). However, SR 126 and Foothill Road within the Mission Rock study area are both eligible County Scenic Highways.

Visual Resources Table 3, which can be found in the "Compliance with Laws, Ordinances, Regulations, and Standards" subsection, presents staff's analysis of the project's conformance with the Ventura County General Plan.

PROJECT DESCRIPTION

The following description of major visual features is taken from the AFC project description. **Visual Resources Figure 1** depicts architectural elevations of the proposed power plant. **Visual Resources Figure 2** depicts the proposed transmission line route (AFC Figure 1.2-2).

POWER PLANT

The project would include five GE LM6000 PG power blocks, and associated features as listed in **Visual Resources Table 2** and depicted in **Visual Resources Figure 3.** The exteriors of major project equipment would be treated with a green and black finish to match the colors of the neighboring Granite Construction asphalt recycling plant (as depicted in the **Project Description** section of this staff assessment).

TRANSMISSION LINE

The project includes a 6.6-mile transmission line (generator tie-line) connecting to the Southern California Edison (SCE) Santa Clara Substation, located approximately 4.4 miles west of the power plant site, in the lower Sulphur Mountain foothills, ½-mile north of Foothill Road. The interconnecting 230-kilovolt (kV) transmission line would consist of

a single-circuit configuration (three conductors), supported by 36 new, steel monopole structures, ranging in height from 76.5 feet (H-frame) to 200 feet, located at appropriate intervals. The generator tie-line would proceed approximately 1.5 miles southwest paralleling the Santa Clara River and Roger Road, then turn to the northwest, adjoining the east side of Ellsworth Barranca immediately north of State Route (SR) 126. Roughly 1.5 miles to the northwest, at Foothill Road, the tie-line would turn westward, leaving the barranca and ascending the foothills. The right-of-way would proceed through undeveloped areas of the foothills a short distance to the north of residences on Rancho Vista and Williams Canyon roads, proceeding to the Santa Clara Substation roughly 2.5 miles to the west. The tie-line would require a 75-foot-wide right-of-way cleared of trees and other vegetation within 10 feet of any conductors.

In many areas where the right-of-way would occupy existing agricultural fields, this would have a minor visual effect. However, in a segment between Telegraph Road and Foothill Road, a 0.3-mile section would require alteration or removal of some large trees within Ellsworth Barranca. These tree alterations and removals would substantially disfigure the existing tall Eucalyptus, and would be visible from Telegraph Road. **Visual Resources Figure 4** depicts an architectural elevation of the proposed transmission-line monopole structures. **Visual Resources Table 2** presents the footprint and height of major visual features of the proposed power plant.

Visual Resources Table 2
Summary of Major Publicly Visible Structures

Proposed New Project Component (in feet)	Length	Width	Height	Diameter	
LM6000 Gas Turbine Enclosure	22	13	22		
LM6000 Air Inlet Filter	50	30	37		
SCR/CO Unit	23	20	31		All Mission Rock features to be painted Amercoat GN-3 (green) or
Exhaust Stack			60	14	
Service/Fire Water Storage Tank			48	70	
Proposed New Project Component (in feet)	Length	Width	Height	Diameter	Amercoat BK-1 (black) to match the neighboring Granite asphalt recycling plant
Demineralized Water Storage Tank			54	48	
Control Building	43	32	25		
Garage/Warehouse	97	32	25		
Chiller	58	37	30		
Batteries	40	9	16		
Transformer Dead End Structures	34	2	65		
Dead End Structures at Substations			77		
Transmission Structures			76 - 200		

EXISTING PROJECT VISUAL SETTING

REGIONAL SETTING

The project is located within a predominantly agricultural greenbelt between the town of Saticoy and city of Santa Paula in the western Santa Clara River Valley, a narrow east-west trending valley of the Western Transverse Range and Santa Ynez Mountains. The valley floor is 2 -3 miles in width, defined in this section by South Mountain, rising just beyond the Santa Clara River to the south; and Sulphur Mountain, whose foothills rise a short distance to the north, and whose peak and ridgeline are prominent in the distance to the north. The proposed power plant site is located roughly 10 miles inland from the Pacific Ocean, and 6 miles east of the city of San Buenaventura (Ventura). The city of Santa Paula is roughly 2 miles to the northeast; and the town of Saticoy (a suburb of Ventura) is located approximately 2.5 miles to the west.

The proposed generator tie-line route follows the Ellsworth Barranca, one of several predominantly natural creek drainages flowing into the Santa Clara River from Sulphur Mountain to the north, which cross perpendicularly to the river valley and represent important scenic landmarks of the valley setting.

Both the proposed power plant and associated linear facilities are within the viewshed of two eligible Ventura County scenic highways, SR 126 and Foothill Road. Neither of these is an eligible state scenic highway in this section. The Mission Rock regional landscape setting is characterized by historic scenic citrus orchards, and is unusual in its scenic/visual sensitivities, as described in the discussion immediately following.

Rural Historic Landscape and CEQA Aesthetic Criterion B

The historic scenic citrus orchard landscape in the project area has been formally recognized as historically significant, and is therefore sensitive to scenic intrusions. In 1996 the County of Ventura Cultural Heritage Board sponsored an architectural survey of the Western Santa Clara Valley encompassing the Mission Rock study area. That study (Triem and Stone 1996) identified a *rural historic landscape* eligible for both the National Register of Historic Places and the California Register of Historical Resources, including hundreds of historic buildings and other features contributing to the landscape. The designated area is listed on the local register (Ventura County Landmarks and Points of Historical Interest) as the Santa Clara Valley Rural Historic District (SCVRHD) (AFC Cultural Resources section, p.5.3-17). According to the 1996 survey, ”[T]he western Santa Clara Valley is unified by the visual evidence of its historic agricultural land uses, and is regionally significant as perhaps the best remaining example of a Southern California ‘citrus belt’ historic landscape.” As summarized in the survey report, a primary objective of the county’s historic survey effort was “to focus on this greenbelt area, with the intent of identifying historic resources which may be threatened by urbanization and to assist in directing future planning efforts related to the greenbelts, and to the critical historic landscapes they represent (Triem and Stone 1996:7-8).”

Mission Rock and most of its associated linear rights-of-way are located within the SCVRHD. Thus, from a regulatory perspective, the proposed project is situated within a landscape of unusual visual sensitivity. However, those visual sensitivities are not identical to those typically examined in a staff assessment/CEQA visual analysis. The visual concerns raised by the setting’s historic status are defined under guidance provided by the National Park Service (Birnbaum 1996; McClelland et al. 1999), and criteria adopted by the County of Ventura under County Ordinance Number 4225: *Cultural Heritage Ordinance* (as amended) (Ventura 2000). Under these guidelines, visual impacts to cultural resources are those which substantially impair the ability of the resource to convey ‘historic integrity’. Such visual impacts may potentially represent a significant impact (to cultural resources) under CEQA.

Historic integrity, however, is not primarily a visual/aesthetic judgment, but a cultural resource one. There are 7 aspects of historic integrity important for understanding potential visual impacts; location, setting, design, feeling, association, materials, and workmanship. A comprehensive discussion relating to historic integrity can be found in the **Cultural Resources** section of this Staff Assessment. Those eligibility and impact conclusions are, however, referenced in this section. Particularly because the nomination of a rural historic landscape depends directly upon its visual/scenic qualities, potential visual impacts to historic resources relate directly to the intent of Criterion b) in CEQA Appendix G under the environmental factor of Aesthetics: (“Would the project substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?”).

The evaluation of visual effects on the SCVRHD's historic integrity is thus found in the Cultural Resources analysis of this Preliminary Staff Assessment. However, those conclusions are cited in this Visual Resources analysis as they relate to CEQA Aesthetics Criterion (b). In other respects this visual analysis follows typical staff procedures described in the "Introduction" subsection above.

PROJECT SITE AND PROJECT VIEWSHED

Visual Resources Figure 5, Visual Setting Map, depicts the visual setting of the proposed project, including KOP locations and the project visual sphere of influence (all figures referred to in the text may be found at the end of this section).

Project Viewshed

Based on the specific scale and form of the project features, the project's visual sphere of influence (VSOI) is defined here as a visual foreground radius of roughly ½-mile from the power plant; and a zone of roughly ¼-mile from the transmission line and poles. Beyond those distance zones, those project features would be visually subordinate within the view and unlikely to attract viewers' attention or cause substantial impact.

In addition to the vicinity of the power plant site, the project viewshed includes all those areas in which the 6.6 miles of proposed generator tie-line and monopole structures (poles) would be visible to sensitive viewers. Over 3 miles of the 6.6-mile generator tie-line route lies within the rural historic landscape described above, often directly adjoining eligible historic properties and other contributing elements. The broad project visual setting consists of the rural historic landscape described above. From an aesthetic perspective, the valley is thus scenically highly intact, presenting a rural historic landscape that is substantially as it was in the early 20th century, i.e., it retains a high degree of historic integrity, as described above. The citrus orchards offer panoramic vistas across the valley from SR 126, which is elevated in relation to the valley floor in this section. A notable characteristic of the valley landscape, however, is the tendency of the orchards to block distant and panoramic views from eye level at many locations within the valley floor.

'Barrancas,' natural creek drainages marked by tall, linear treerows of Eucalyptus and Poplar trees which run perpendicularly to the river valley at regular intervals, date to the valley's historic period and are contributing features of the rural historic landscape. Highly intact Victorian and pre-Victorian farmsteads and other historic structures are prominent throughout the valley.

Sensitive Viewer Groups

Potentially sensitive viewer groups in the viewshed include motorists on SR 126; local residents, either from their homes or from local roads; and other motorists on local roads. No notable visitor destinations or recreational sites were identified in the project viewshed.

No sensitive viewer groups were identified within the power plant site's Visual Sphere of Influence (VSOI or viewshed). In the valley floor portion of the proposed tie-line route, the generator tie-line would occupy the immediate visual foreground of a number of residences in or near Ellsworth Barranca, and be visible to motorists on portions of Telegraph and Foothill roads. (Foothill Road is an eligible county scenic road, but has not been designated).

Northwest of Foothill Road, the tie-line ascends into undeveloped portions of the adjoining foothills, passing north of residential areas above (north of) Foothill Road. However, because the route lies behind an intervening mountain ridge, it is visually isolated from all but one or two residences on Williams Canyon Road.

Power Plant Site

Visual Resources Figure 6 - Visual Setting Photos, depicts photographs of typical visual setting character.

The 9.7 acre power plant site is located within an existing industrial area of roughly 0.2 square miles (roughly 128 acres) in area, located approximately ½-mile south of SR 126 and ¼-mile north of the Santa Clara River. Visual quality of the industrial zone is very low in its immediate vicinity, consisting of an asphalt processing plant, several auto wrecking yards, RV storage, oil field service companies, and other uses of very low visual quality. This area is surrounded by low-growing, visually open agricultural fields, in contrast to much of the valley, which consist predominantly of citrus orchards. The Todd Road County Jail lies ¼-mile to the west of the site; and a large scale fruit packing/processing plant of industrial appearance lies roughly 1/3-mile to the north, in the immediate visual foreground of SR 126. In the agricultural fields surrounding the industrial area, large expanses of plastic sheeting cover the fields seasonally, detracting from the natural character of the vicinity for much of the year. The project site and industrial area are bordered on their western side by a tall existing treerow of Eucalyptus which, however, has minimal screening value because there are few viewers in that direction.

As described above, the power plant's visual sphere of influence (VSOI) defined as its foreground viewshed (½-mile radius around the power plant site) is generally of low viewer sensitivity. No residences were identified in this zone. SR 126, at a distance of ½-mile, lies at the outer limit of the foreground viewing zone. Although roughly ¼-mile from the Santa Clara River, the river currently lacks developed trails or other facilities, and is closed to the public, thus receiving very low levels of use. Portions of the floodplain in the vicinity of the project site are owned by the Nature Conservancy and could be developed for recreational or educational access in the future, but are not utilized currently. The power plant could be visible from nearby agricultural fields to the north and west of the industrial zone. Generally, however, workers at their workplace are considered to be low-sensitivity viewers due to the focus of their activities on work, rather than recreation or scenery. Similarly, to the limited extent that the project could be visible to viewers (workers and prisoners) at the county jail, located under ¼-mile from the site, viewer sensitivity is considered low due to activity type. Traffic on nearby public roadways is low, consisting predominantly of workers traveling to and from work sites.

The Wishtoyo Chumash Foundation (Wishtoyo) is a non-profit environmental advocacy group, and an intervenor and party to the proceedings. Wishtoyo expressed concern with potential visual impacts to tribal cultural resources and associated traditional landscape features of the adjoining Santa Clara River and environs (Thompson 2016). The **Cultural Resources** section of this staff assessment touches on this concern and others expressed by Wishtoyo.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section includes information about the following:

- Method and threshold for determining significance
- Direct/indirect/induced impacts and mitigation
- Cumulative impacts and mitigation

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

CEQA Criteria of Significance

To determine whether there is a potentially significant visual resources impact generated by a project, Energy Commission staff reviews the project using the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et. seq), Appendix G Environmental Checklist. The checklist questions pertaining to “Aesthetics” are as follows:

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?

The likelihood of a significant visual impact under Criterion c) of the CEQA Guidelines, above, is determined in this study by two fundamental factors: the *visual sensitivity* or 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 *viewer concern* for scenic values); and the degree of *visual change* anticipated as a result of the project. Generally, viewing locations with high sensitivity that experience high levels of visual change from a project are likely to experience significant adverse impacts.

Please refer to **Appendix VR-1** for a complete description of staff’s visual resources evaluation method and criteria.

In addition, aesthetics criterion b) is discussed in the context of the cultural resources evaluation found elsewhere in this staff assessment. The SCVRHD constitutes a scenic resource. Accordingly, staff interprets the intent of aesthetics criterion b) to imply that visual impacts to the historic integrity of the district also represent an impact to a scenic resource. The conclusions for criterion b) ("would the project substantially damage scenic resources?") thus reflect both visual criteria, and those of the cultural resources analysis of this staff assessment.

The Ventura County Initial Study Assessment Guidelines provide significance thresholds applicable to county CEQA reviews (ISAG, County of Ventura, 2011). These criteria, while different in some respects from those of CEQA Appendix G., are similar and not inconsistent with Appendix G. Further, Energy Commission staff's methodology for identifying impacts addresses these criteria. The county criteria are discussed below following the discussion of Appendix G criteria.

Staff's visual resources impact analysis is based on federal, state, or local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive scenic 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). For instance, a general plan's designation of an area as "scenic" would influence staff's ranking of the area's sensitivity to visual changes.

DIRECT/INDIRECT IMPACTS AND MITIGATION

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 (called "Key Observation Points" [KOPs]). KOPs are selected to be representative of the most characteristic and most critical viewing groups and locations from which the project would be seen.

Visual Resources Figure 5 depicts the locations of the four KOPs used in this visual resources analysis:

- KOP 1 – View of Power Plant by Motorists on SR 126
- KOP 2 – View of Transmission Tie-Line by Motorists on SR 126
- KOP 3 – View of Transmission Tie-Line by Motorists on Telegraph Road
- KOP 4 – View of Transmission Tie-Line by Motorists on Foothill Road

The KOPs may be grouped into the following broad categories of sensitive viewers with visual exposure to the proposed project:

KOP 1 addresses effects of the power plant to viewers on SR 126.

KOP 2 addresses effects of the tie-line to viewers on SR 126.

KOPs 3 and 4 address effects of the tie-line to local residents and motorists on the two main local roads with exposure to the tie-line.

Staff's analysis of the project's effect on KOPs 1 through 4 is presented under "Operation Impacts and Mitigation," below.

The impact discussion is presented under the following four criteria from CEQA Guidelines Appendix G: a) scenic vistas, b) scenic resources, c) visual character or quality, and d) light or glare.

Scenic Vistas

"Would the project have a substantial adverse effect on a scenic vista?"

There are no formally designated scenic vistas in the project study area. A scenic vista for the purpose of this analysis is defined as a public viewpoint or view corridor widely or locally regarded as having exceptional scenic value, as reflected in recognition in public policies or documents, or by observed high levels of public use. Most views from the SCVRHD may thus be considered scenic vistas due to the landscape's formal recognition as a historical resource, and thus a valued, scenic resource under county policies.

The project would thus affect scenic vistas of the SCVRHD, and this definition would include all KOPs used in this analysis. With recommended conditions of certification, impacts would be less than significant as discussed in detail under the analysis of KOPs 1 – 4.

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?"

The focus of Criterion b) is on the physical features that comprise a valued landscape or view. A scenic resource for the purpose of staff analysis includes a unique water feature; a unique physical terrain feature; a tree having a unique visual/historical importance to a community; historic building; or other scenically important physical features, particularly if located within a designated, federal scenic byway or state scenic highway corridor.

There are no designated or eligible state scenic highways within the project viewshed. Notable scenic resources of the viewshed include the mountains, the river corridor, the orchards and barrancas, and formally recognized historic buildings and related landscape features.

In this study, buildings, trees, and other features were considered potential scenic resources as defined in Criterion b) if they have been identified as contributing elements of the SCVRHD.

A number of large Eucalyptus trees in the proposed transmission tie-line right-of-way between poles 16 and 17 are prominent scenic elements as seen from Telegraph Road, and have also been identified as contributing elements of the SCVRHD. Several of these trees in or near the right-of-way would be severely trimmed, with most of their canopy removed, resulting in a substantial change to these views. Removal of these and other trees in historic treerows due to the transmission tie-line would represent substantial visual damage to the integrity of the SCVRHD, and thus a significant impact under Criterion b).

With application of recommended Conditions of Certification **VIS-2**, **CUL-9** and **CUL-14**, however, this potentially significant impact to scenic resources under Aesthetics Criterion b) would be reduced to a less-than-significant level. Under these measures, impacted contributing treerows would be replaced at historic on- and off-site locations.

The impact to these barranca trees at Telegraph Road is discussed further under KOP 3, below, as it relates to Criterion c).

INSERT TABLE VR-2 HERE

Visual Character Quality

"Would the project substantially degrade the existing visual character or quality of the site and its surroundings?"

Operation Impacts and Mitigation

Impacts under CEQA Criterion c) are determined by staff's visual sensitivity/visual change assessment methodology, applied through analysis of representative KOPs throughout the project viewshed, as described above.

The analysis of KOPs is grouped by category of sensitive viewers in the principal affected portions of the project viewshed:

Motorists on SR 126 (KOPs 1 and 2)

KOP 1 – View of power plant site from SR 126 Looking Southeast

KOP 1 addresses potential impacts of the project power plant. **Visual Resources Figures (7) a** and **(7) b** depict existing and simulated views of the power plant site from SR 126 looking east at a distance of approximately ½-mile. This view is representative of views of motorists on SR 126 and represents a worst-case instance due to its proximity to the site, and its position on an elevated section of SR 126 that accentuates site visibility.

Visual Sensitivity

Visual Quality: While views from SR 126 in the project area are often scenic ones of an intact orchard landscape, the power plant site vicinity, located south of SR 126 and east of Todd Barranca, is characterized by various industrial uses, the county jail and a large agricultural processing plant that occupies a ¼-mile of highway frontage. The agricultural fields in this section are also covered by large expanses of plastic sheeting for much of the year, further compromising the visual intactness and unity of views toward the site. Views toward the site would remain dominated by the natural slopes and skyline of South Mountain. Visual quality of views to the power plant site from the highway is thus *moderate* at KOP 1.

Viewer Concern: A somewhat elevated level of viewer concern is assumed for motorists on SR 126 based on the county designation of the valley as a historic landscape. This section of the SR 126 is not an eligible state scenic highway, but is an eligible county scenic highway. Overall, viewer concern is thus *moderate to high.*

Viewer Exposure: KOP 1 represents the views of SR 126 motorists, who are the most numerous viewer group in the viewshed. It is located on an elevated railroad overcrossing that is an atypical worst-case view to the project site. More typically, views to the project site by eastbound motorists on SR 126 are blocked by tall Eucalyptus treerows of Ellsworth and Todd barrancas until viewers pass Todd Barranca, under 1/3-mile west of the project site. The project would thus be visible to eastbound motorists very briefly, at a very wide viewing angle to the direction of travel. The project would be more visible to westbound motorists on SR 126, but these views are also highly filtered by intervening roadside trees along the highway's south shoulder. The site would be intermittently visible to westbound motorists over a distance of roughly ½-mile (or 30 seconds at 60 mph) at distances of between ½- and ¾-mile. At these distances, project visual dominance would be low to moderate. Prominent views of the project as depicted in the simulation of KOP 1 would be very brief, thus viewer exposure is *low to moderate*.

Overall Visual Sensitivity: Overall visual sensitivity is thus considered *moderate*.

Visual Change

Visual Resources Figure 7b presents a visual simulation of the project as viewed from KOP 1.

Visual Contrast: The blocky, vertical forms and industrial character of the power plant components would contrast in form and line with the vegetated slopes of their mountain backdrop to a moderate degree. The applicant has proposed to paint the facility in dark earth tones such as dark green or brown to reduce contrast, allowing the plant to recede into the similar colors and values of the background, as depicted in the simulation. Condition of Certification **VIS-1** calls for non-reflective dark green or brown color treatment of all major power plant structures to minimize color contrast and blend with the visual background. With incorporation of this measure, visual contrast would be *moderate*.

Project Dominance: The project would range from visually subordinate to co-dominant, occupying a small to moderate portion of the field of view. The facility would remain very subordinate in scale to the larger and more striking mountain slopes and ridgeline. The level of dominance observed in the simulation of KOP 1 would be momentary only, thus project dominance is *low to moderate*.

View Blockage: The project facilities would intrude into a portion of the view of South Mountain and the Santa Clara River, but to a small degree in a section in which the visual foreground is characterized by other existing visual intrusions (county jail, asphalt recycling plant, large processing plant in highway foreground). Due to existing visual intrusions, view blockage is *low*.

Overall Visual Change: Overall visual change would thus be *low to moderate*.

Impact Significance: In the context of the setting's moderate visual sensitivity, the low to moderate level of visual change that would be experienced by motorists on SR 126 would be a ***less than significant*** visual impact.

KOP 2 – View from SR 126 looking northeast toward the transmission tie-line crossing

KOP 2 addresses impacts of the tie-line to motorists on SR 126. **Visual Resources Figures 8a** and **8b** depict existing and simulated views of the tie-line crossing at Ellsworth Barranca from SR 126 as seen by eastbound motorists.

Visual Sensitivity

Visual Quality: KOP 2 is located on eastbound SR 126, about 1.6 miles west of the power plant site, at the point where the proposed tie-line, following the Ellsworth Barranca, would cross the highway. This KOP is located at the center of the SCVRHD characterized by citrus orchards, farmsteads, and the riparian woodland and treerows along the barrancas. Thus visual quality is *moderate to high.*

Viewer Concern: As for KOP 1, a somewhat elevated level of viewer concern is assumed based on the county designation of the valley as a historic landscape, and the scenic expectations of motorists in this scenic setting. Viewer concern is *moderate to high*.

Viewer Exposure: Motorists on SR 126 are the most numerous viewer group in the viewshed. However, the tie-line and monopoles would not begin to attract viewers' attention at distances greater than roughly ¼-mile. Beyond that distance, the poles and lines would be visually very subordinate, tending not to attract the awareness of casual viewers. This would represent a view duration of about 15 seconds at 60 mph resulting in *low to moderate* viewer exposure.

Overall Visual Sensitivity: Overall visual sensitivity of this KOP is thus *moderate*.

Visual Change

Visual Contrast: As depicted in **Visual Resources Figure 5b,** the tie-line monopole structure nearest the highway (pole 14) would be partially screened to eastbound motorists by tall trees of Ellsworth Barranca, substantially reducing visibility and contrast. Westbound viewers in the same vicinity would have unscreened views of the same pole, increasing its contrast somewhat. In addition, poles 13 and 15, located approximately 1,000 feet to the south and 800 feet to the north of pole 14, respectively, would fall within the field of view of motorists, adding to project contrast. The industrial character of tall vertical forms and metallic texture of the monopole structures, and horizontal lines of the transmission lines within a ¼-mile distance zone would create *moderate* visual contrast.

Project Dominance:

Similarly, the tie-line would have *low to moderate* dominance within a roughly ¼-mile distance zone. The poles and lines would briefly attract attention as motorists approach and pass them.

View Blockage: The transmission tie-line would intrude into panoramic, scenic views north and south of the highway, lowering their visual intactness, unity and visual quality to a noticeable degree. They would however remain a visually subordinate element of these views. The level of intrusion into the scenic view was thus considered *low to moderate*.

Overall Visual Change*:* Overall, visual change from KOP 2 is thus *low to moderate*.

Impact Significance

In the context of the setting's moderate visual sensitivity, the low to moderate level of project visual change is considered a ***less than significant*** visual impact.

Staff-Recommended Mitigation:

Although no mitigation is required at this KOP, staff's recommended Condition of Certification **VIS-1** (Surface Treatment of Project Structures), which is proposed to mitigate visual impacts at KOP 3, would reduce contrast and dominance of the generator tie-line from KOP 2.

Residual Impact Significance after Mitigation with Staff-Recommended Measures:

Visual impacts from the tie-line to SR 126 viewers would be ***less than significant*** without mitigation.

Motorists on Telegraph Road

KOP 3 – View from Telegraph Road looking southwest toward the transmission tie-line crossing

Views of the proposed tie-line would be seen by local residents primarily as motorists on two main local roads that cross the right-of-way: Telegraph Road and Foothill Road. KOP 3 addresses impacts of the tie-line to residents and motorists at Telegraph Road.

Visual Resources Figures 9a and 9b, depict existing and simulated views of the tie-line at Ellsworth Barranca as seen by westbound motorists on Telegraph Road.

Visual Sensitivity

Visual Quality: As described previously, visual quality in the rural valley landscape is *moderate to high*.

Viewer Concern: A somewhat elevated level of viewer concern is assumed at this KOP based on the county designation of the valley as a historic landscape. Due to a high proportion of viewers including local residents with high sensitivity to those historic landscape values, viewer concern is *moderate to high.*

Viewer Exposure: Upper portions of pole 16 are depicted in the simulation as seen by westbound motorists on Telegraph Road; poles 14 and 15 to the south would also be visible to westbound motorists, over the adjoining open agricultural fields to the southeast. Views of the transmission lines and poles to the north and south would be largely blocked to eastbound motorists by tree canopy of the barranca and nearby residences. All of pole 16 would be briefly but prominently visible at the road shoulder to passing motorists, as would the proposed transmission right-of-way.

Tree canopy removal in the right-of-way would be visible primarily to eastbound motorists, over a short portion of Telegraph Road near the creek crossing. These effects would also be prominently but briefly visible resulting in *moderat*e viewer exposure.

Overall Visual Sensitivity: Overall visual sensitivity of this KOP is thus *moderate*.

Visual Change

KOP 3 depicts pole 16 of the tie-line as it would be seen by approaching westbound motorists on Telegraph Road. However, in addition to this view, the largest likely visual effect at this location would result from vegetation clearing of the tie-line right-of-way. Particularly north (right in the photo) of this view, a 75-foot-wide right-of-way would be cleared of vegetation, including some of the large Eucalyptus occupying this area around the Ellsworth Barranca, as indicated in **Visual Resources Figure 9c**. The cleared right-of-way would be visible to passing motorists on Telegraph Road. The affected trees have been identified by the county and cultural resources staff as contributing elements of the historic landscape district.

Visual Contrast: As depicted in **Visual Resources Figure 9b,** for westbound viewers, lower portions of pole 16 near the roadway would be partially screened by lower vegetation, but the upper part of the pole and the lines would be visible and prominent in the immediate foreground. For eastbound viewers, the entire pole would be visible in the immediate foreground shoulder of the road. The contrasting vertical form and metallic, industrial character and scale at close viewing distance would be highly evident and create a moderate level of contrast with the setting. The pole is depicted as dark brown in color in the simulation, which reduces contrast and dominance in the overall context of the surroundings, especially from viewpoints at a distance.

The simulation does not depict the typical arms and insulators of the poles as proposed (refer to **Visual Resources Figure 4** (monopole elevation)), which increase contrast due to their angular, industrial forms and reflective surfaces.

In addition to contrast created by the addition of the tie-line pole, the 75-foot-wide tie-line right-of-way would require removal or severe trimming of several of the Eucalyptus trees shown in **Visual Resources Figure 9c.** It is not known at this time which of these trees would be removed or trimmed. The removal of isolated individual trees in this grove would not necessarily represent a substantial or noticeable impact. In the worst case, however, removal or disfiguring of a substantial portion of the canopy of this grove of trees, and its replacement with transmission poles and power-lines, could represent a high level of visual change, and a substantial decline in visual quality.

Depending upon the specific tree removal required in this location, which is not known in detail, contrast could range from *moderate*, to *moderate-to-high*. Additional information was requested from the applicant by staff, but data responses to date lack the specificity needed to fully understand the impacts in this location.

Project Dominance: From near foreground viewpoints such as this, dominance of transmission poles and lines is moderate (visually co-dominant with other elements of the scene) overall. The duration in which the foreground pole would be a visually dominant element would be brief. However, dominance of the pole and cleared right-of-way would be increased by removal of a substantial portion of the adjacent tree canopy. Project dominance would be *moderate or high*, depending on specific tree removal.

View Blockage: For eastbound motorists, the prominent transmission pole at the road shoulder would intrude into the scenic view of the barranca treerow briefly, altering the character and quality of that view resulting in view blockage that would be *low to moderate.*

Overall Visual Change*:* Overall, visual change from KOP 3 depending on the actual extent of tree trimming and removal could range from *moderate; to moderately high*.

Impact Significance

In the context of the setting's moderately high visual sensitivity, either a moderate or moderately high level of visual change is considered a ***potentially significant*** visual impact.

Staff-Recommended Mitigation:

To reduce contrast and dominance of the tie-line from KOP 3, and to reduce viewer exposure to unscreened views of right-of-way tree trimming and vegetation removal, staff recommends Conditions of Certification **VIS-1**, Surface Treatment of Project Structures; and **VIS-2**, Tree Removal, Replacement, and Screening Measures. Viewer exposure, project contrast, and project dominance could all be reduced by Condition of Certification **VIS-2**, Tree Removal, Replacement, and Screening Measures.

Residual Impact Significance after Mitigation with Staff-Recommended Measures:

As mentioned in the "Summary of Conclusions" above, staff has submitted a data request for additional information on expected tree removal, but data responses to date lack the specificity needed to fully understand the impacts in various locations, particularly at KOP 3. Condition of Certification **VIS-2** calls for site-specific tree surveys and vegetation management plans needed to provide this understanding and to address potential worst-case visual issues.

With all recommended measures, which would reduce viewer exposure to the cleared right-of-way and monopole and overall visual change to *low-to-moderate*, potential impacts of worst-case tree removal at Telegraph Road could be reduced to ***less than significant***.

Motorists on Foothill Road

KOP 4 – View from Foothill Road looking northeast toward the transmission tie-line crossing

KOP 4 addresses impacts of the tie-line to local residents and motorists as seen from Foothill Road. **Visual Resources Figures 10a and 10b,** depict existing and simulated views of the tie-line crossing at Ellsworth Barranca as seen by westbound motorists on Foothill Road.

Visual Sensitivity

Visual quality is *moderate to high*. Foothill Road is an eligible county scenic highway in the Ventura County General Plan and concern of local residents and motorists is assumed to be *moderate* to high. Viewer exposure is lower than KOP 3 due to visual screening and filtering of the tie-line poles by foreground citrus orchards. Pole 18 is less prominent in this view than pole 16 at KOP 3 due to its set-back position in relation to the road, and the screening of intervening orchard trees. Other adjacent poles would also be visually filtered by orchards and barranca treerows. Exposure is thus *low to moderate*, and overall visual sensitivity at KOP 4 is *moderate.*

Visual Change

Visual change from this KOP would also be less than KOP 3, for similar reasons. Because the nearest poles 18 and 19 are both set-back far from the roadway behind a foreground of citrus orchard, they would be far less prominent than pole 16 at KOP 3. The proposed route in this section (pole 18 to pole 19) would not affect large trees of the barranca, and vegetation in the right-of-way is low-growing, so vegetation clearing of the right-of-way is not anticipated with incorporation of Condition of Certification **VIS-2**. (VIS-2 calls for retention or replacement of allowable roadside trees to screen the right-of-way). The upper portions of pole 18 would be visible and prominent for a short distance of Foothill Road in either direction, but contrast and dominance would be moderate. Pole 18 would be visible against views of the sky and nearby barranca treerows for a few seconds, a low to moderate level of view intrusion. Overall visual change would thus be *moderate*.

Impact Significance

In the context of the setting's moderate visual sensitivity, the moderate level of project visual change is considered ***less than significant***.

Staff-Recommended Mitigation

Although no mitigation is required, staff's recommended Conditions of Certification **VIS-1** (Surface Treatment of Project Structures) and **VIS-2** (Tree Removal, Replacement, and Screening Measures), would further reduce the less than significant visual impacts at KOP 4.

Residual Impact Significance after Mitigation with Staff-Recommended Measures:

Visual impacts from the tie-line to viewers on Foothill Road would be ***less than significant*** without mitigation.

Other Viewer Groups

No residents or other sensitive viewers were identified in the viewshed of the proposed power plant. A number of residences in the vicinity of Ellsworth Barranca could have views of poles of the generator tie-line. However, residents in the valley would experience the greatest visual effects as motorists on public roadways. For that reason, KOPs 3 and 4 were considered representative of potential impacts to this viewer group.

Northwest of KOP 4 the transmission line alignment would cross an undeveloped area of hills that lie outside of the viewshed of sensitive residential or other viewers, with the exception of one or two residences on private William Canyon Road. This viewpoint was not identified as a KOP, which are typically selected to represent public viewpoints, and public viewing groups of substantial numbers of viewers. Three poles of 106-foot height would be visible from this location at distances of between ¼- and ½-mile. No public trails or other recreational facilities were identified in the viewshed of this portion of right-of-way.

Construction Impacts and Mitigation

Mission Rock construction is estimated to take approximately 23 months, with a peak workforce of 146. Construction would typically be scheduled to occur between 7 a.m. and 7 p.m. on weekdays and 8 a.m. and 5 p.m. on Saturdays. Additional hours may be necessary to make up schedule deficiencies. During some construction periods and during the startup phase of the project, some activities would continue 24 hours per day, 7 days per week.

Construction staging is proposed to take place on an adjacent parcel to the power plant site, within the existing industrial zone. Due to the lack of sensitive viewers in the foreground of the power plant and staging sites, visual impacts from power plant construction and construction staging are not anticipated. Potential lighting effects of construction are discussed under "Light and Glare," below.

Impacts of tie-line construction would include the sight of transport of poles and other tie-line materials on local roads. These impacts would be short-lived, low to moderate in severity, and therefore considered less than significant. Construction impacts from vegetation clearing between poles 16 and 17 at Telegraph Road would potentially be permanent, and are addressed under KOP 3. Some northern portions of the transmission tie-line would be installed /constructed by helicopter. These would occur outside of the viewshed of most nearby residents, would be short-lived and *moderate* in severity, and would be ***less than significant.***

Linears

Overhead Transmission Lines: The 6.6 –mile long transmission tie-line proposed from the Mission Rock power plant to the Santa Clara Substation was described in detail in the **Project Description**, above. Potential impacts of the transmission tie-line are discussed above under KOPs 3 and 4. The potential visual effects on the historic integrity of the SCVRHD are addressed under CEQA Criterion b) in the "Scenic Resources" subsection, above.

Natural gas would be delivered to the project via a tap off of the existing Southern California Gas Company (SoCalGas) natural gas Line 404 and 406 via an approximately 2.4-mile-long pipeline. Three potential gas pipeline routes were under consideration: One would extend from the Line 404/406 location north to the rail road, then northeast along the railway corridor to the Todd Barranca, then south along the western side of the barranca until it reaches the tie-line and water service corridor and then east in this corridor until it reaches the project site. The other would go directly south by southeast from the Line 404/406 location to the water service corridor and follow that corridor all the way to the power plant. A third potential gas pipeline route was reviewed by staff and rejected because of safety concerns about the section of that pipeline route near the Ventura County Todd Road Jail. Following construction the pipeline would not be visually evident, and would have ***less than significant*** visual effects.

Mission Rock would use treated recycled water supplied by the Limoneira Company via a new, 1.7-mile-long water supply pipeline. The pipeline would tap into an existing Limoneira Company recycled water line and follow the proposed tie-line right-of-way to the Mission Rock site. Like the natural gas line, following construction the water line would not be visually evident, and would have ***less than significant*** visual effects.

Visible Water Vapor Plumes

The proposed project employs simple-cycle gas turbines that would not emit visible water vapor plumes at the exhaust stacks. Visible plumes if any could occur from the wet surface air cooler (WSAC). Staff found that under the proposed operating loads and ambient air conditions, any visible plumes from the WSAC would be very infrequent, very small, and would not have the potential to reach the staff minimum thresholds for visual plume significance (20 percent of seasonal daylight clear hours). Staff concluded that there would be little or no plume formation under anticipated operating and ambient conditions (Walters, 2016 – email communication).

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?"

The proposed project during operation has the potential to introduce light offsite to surrounding properties, as well as to illuminate the night time sky. If bright exterior lights are not properly hooded or directed, on-site lighting could introduce a significant light or glare distraction to the project vicinity. The potential for night-time light pollution in this low-light rural area is a concern. Because some construction activities may take place 24 hours a day, seven days a week, construction lighting would occur.

Under staff-recommended Conditions of Certification **VIS-3** and **VIS-4,** temporary and permanent project lighting would require 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 would not be directed upward, would not illuminate the nighttime sky, and would conform generally to International Dark-Sky Association recommendations for lighting zone LZ1; d) illumination of the project and its immediate vicinity is minimized, and e) lighting complies with local policies and ordinances. Where lighting is not required for normal operation, safety or security, switches or motion detectors would be provided to allow these areas to remain dark except as needed. To the extent possible, night construction lighting would be directed toward the center of the site. Task-specific lighting would be used to the extent practical.

Reflective glare could occur if shiny or highly reflective facility components are visible to the public. With Condition of Certification **VIS-1**, all major project features would be painted in dark, non-reflective colors, and non-reflective transmission line insulators would be required. With this condition, no reflective glare would be anticipated.

With implementation of Conditions of Certification **VIS-3** and **VIS-4**, the project's construction and operation-related lighting impacts in the context of the existing lighting are anticipated to be ***less than significant***.

CUMULATIVE IMPACTS AND MITIGATION

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 proposed project with all existing or reasonably foreseeable future 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.

Three cumulative projects were identified within the project's VSOI. These projects include (**Executive Summary Table One**):

1. Todd Road Evidence Storage Building PL14-0125

2. Todd Road Jail Medical Wing Expansion

3. Santa Clara Waste Water for a waste water treatment facility LU 11-0018

Two of the projects would be located at the county jail site, and one would be located within the industrial zone of which the power plant site is a part. The proposed cumulative projects would introduce additional structures (a wastewater treatment facility, medical wing expansion, and an evidence storage building) to the same foreground viewshed as the Mission Rock power plant. Because the existing visual setting of these three proposals is impaired by intrusion of existing industrial uses, visual sensitivity is moderate. Under a cumulative scenario of these projects and Mission Rock, cumulative visual change could be moderate. Impacts would be perceived, but would remain less than significant. The cumulative effect would be to lower the visual intactness and unity of views toward the existing industrial area somewhat. These views would remain dominated by the natural slopes and ridgeline of South Mountain.

VENTURA COUNTY SCENIC RESOURCES IMPACT CRITERIA

The Ventura County Initial Study Assessment Guidelines specify impact thresholds to guide CEQA impact findings (VC, 2011):

1. A project has the potential to create a significant impact to *scenic resources* if it:

    a. Is located within an area that has a *scenic resource* that is visible from a *public viewing location*; and,

    b. Would physically alter the *scenic resource* either individually or cumulatively *when* combined with recently approved, current, and reasonably foreseeable future projects; or

    c. *Would* substantially obstruct, degrade, or obscure the *scenic vista*, either individually or cumulatively when combined with recently approved, current, and reasonably foreseeable future projects.

2. Any project that is inconsistent with any of . . . the (relevant) policies of the Ventura County General Plan *Goals, Policies and Programs* or policies of the applicable Area Plan (above), will result in a potentially significant environmental impact.

    The county guidelines define scenic resources as ‘aesthetically pleasing natural physical features.’ Because the county impact thresholds are substantially similar to those of CEQA Guidelines Appendix G, staff’s analysis following the CEQA guidelines is consistent with the county thresholds. Consistency with the Ventura County General Plan is discussed in the following section.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Visual Resources Table 3 provides an analysis of the applicable LORS pertaining to aesthetics or preservation and protection of sensitive visual resources relevant to the proposed project. Conditions of certification are proposed to make the project conform to a LORS where appropriate.

Visual Resources Table 3

Proposed Project's Consistency with LORS Applicable to Visual Resources

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
State			
Local			
Ventura County General Plan (as amended 2015) 1.7 Scenic Resources Element	• The Scenic Resources Element identifies Scenic Resource Areas (SRA), primarily comprising the viewsheds of the county's lakes. Mission Rock is not located in or near any County SRAs. State Highway 126 and Foothill Road within the project study area are listed as eligible county scenic highways, but apparently have not been designated or adopted as such. If adopted in the future, these roads would then be considered SRAs (General Plan Resources Appendix 1.7.3).	Not applicable	There are no currently adopted county scenic highways or SRAs in the vicinity of Mission Rock and the associated tie-line.
	• Policy 1.7.2.1 states that "discretionary development which would significantly degrade visual resources or significantly alter or obscure public views of visual resources shall be prohibited unless no feasible mitigation measures are available, and the decision-making body determines there are overriding considerations".	Consistent with recommended conditions of certification.	The project transmission lines would alter public views of visual resources. With recommended Conditions of Certification **VIS-1** and **VIS-2**, these effects could be reduced to a less than significant level.

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
	• Policy 4.5.2.1 New gas, electric, cable television and telephone utility transmission lines shall use or parallel existing utility rights-of way where feasible and avoid scenic areas when not in conflict with the rules and regulations of the California Public Utilities Commission (CPUC). When such areas cannot be avoided, transmission lines should be designed and located in a manner to minimize their visual impact.	Undetermined.	The transmission line would not avoid scenic areas. With recommended Conditions of Certification **VIS-1** and **VIS-2**, viewer exposure to the transmission lines and poles would be reduced in the long term by visual screening from tree replacement and screening. Condition of Certification **VIS-2** calls for site-specific tree surveys and vegetation management plans needed to fully evaluate and address potential visual issues.
	• Policy 4.5.2.2 All transmission lines should be located and constructed in a manner which minimizes disruption of natural vegetation and agricultural activities and avoids unnecessary grading of slopes when not in conflict with the rules and regulations of the CPUC.	Consistent with recommended conditions of certification.	The project would disrupt historic tree treerows. With recommended Condition of Certification **VIS-2,** disruption to trees would be minimized and replacement of trees implemented.
Ventura County Non-Coastal Zoning Ordinance	Sec. 8107-25 - Tree Protection Regulations (1992) The ordinance identifies various categories of protected trees, including Historical Trees identified on the federal or California historic resources inventories, to be of historical significance. Altering or felling protected trees requires a Discretionary Tree Permit from Ventura County.	Consistent. However various exemptions, including Sec. 8107-25-6(b) and (e), applying to public utilities and rights-of-way, would allow issuance of a Ministerial tree permit.	Sec. 8107-25-6(b) and (e), would allow issuance of a Ministerial tree permit applying to public utilities and rights-of-way.

LORS		Consistency Determination	Basis for Consistency
Source	**Policy and Strategy Descriptions**		
	Although felling of protected trees is generally restricted, the ordinance provides numerous exemptions, some of which would apply to the project.	Consistent	
	Sec. 8109-3.1.3.a.3 Industrial performance standards The following shall be maintained at levels which are appropriate for the zone and geographic area and are not objectionable at the point of measurement when the use is in normal operation: glare or heat.	Consistent	With Condition of Certification **VIS-4**, nighttime glare would be minimized.
	Sec. 8109-0.6.4. Landscaping. The following regulations shall apply to all industrial zones (M1, M2 and M3): a. Required yards adjacent to streets, not used for other purposes, shall be improved with appropriate permanently maintained evergreen plant material or ground cover. Such landscaping shall extend to the street curb line, where appropriate. b. Trees, approved as to type, number and location by the Planning Director, shall be planted along the street line of each site. Such street trees may also be located on private property and grouped or clustered as appropriate. c. At least five percent of any permit area in the M2 or M3 zone shall be landscaped.		As described in Condition of Certification **VIS-2**, after licensing and prior to construction, applicant would prepare a detailed landscape plan that will satisfy these requirements.

NOTEWORTHY PUBLIC BENEFITS

No noteworthy visual public benefits were identified.

ENVIRONMENTAL JUSTICE

Environmental Justice (EJ) populations may experience disproportionate visual impacts if the siting of visually intrusive or degrading projects, particularly unmitigated industrial facilities, occurs within or near EJ communities to a greater extent than within the community at large. As depicted in **Environmental Justice Figure 1** and **Figure 2**, the project is adjacent to an EJ population at three specific segments of the project. These three segments of the project would fall within the project's foreground viewshed or visual sphere of influence.

The first segment of the project where an EJ population is present, is within a 1/2-mile radius of the power plant site. This area is identified as an EJ population due to the presence of the nearby Todd Road Jail facility, which includes a large number of minority occupants. However, occupants of the Todd Road Jail facility would not have views of the power plant, because the plant would not be visible from inside the jail, and all outdoor views of the plant from the jail would be blocked by the intervening jail buildings themselves. No other residences, recreational destinations, or other high sensitivity viewer groups were identified within the foreground viewshed of the power plant in this segment.

The second segment of the project where an EJ population is present is adjacent to the proposed transmission line right-of-way between State Route (SR) 126 and Telegraph Road. Potentially affected viewers in the viewshed of this segment of the project include a small number of nearby residences and farm worker's housing within ¼-mile of the transmission line. The level of impact anticipated for these affected viewers, who would have views of one monopole at close distance, is considered moderately adverse and less than significant.

The third, and final, segment of the project where an EJ population is present is along the last leg of the project transmission line north of Foothill Road. As described previously, residents in this area would be minimally affected by the transmission line because the viewers are largely visually isolated from the line by the intervening ridgeline to the north of the residential area. One estate on Williams Canyon Road would have views of two monopoles at a distance of roughly ¼-mile or more. At this distance, visual effects of these views would be minor and less than significant.

The power plant is adjacent to agricultural land and transmission line is surrounded by agricultural land. Farm workers within a ½-mile radius of the power plant would be exposed to foreground views of the power plant, and would likely comprise a predominantly minority population. Farm workers within ¼-mile radius of the transmission line, would be exposed to foreground views of the transmission line. However, in Staff's visual analyses, workers at their place of employment, including farm workers, are typically considered to be a viewer group with low sensitivity/viewer concern, by virtue of their activity type.

Because the activity is not focused on scenic or visual quality, the visual expectations of workers are normally regarded to be low. Thus, regardless of the EJ characteristics of farm worker-viewers in this area, they would normally be considered to have a relatively low potential for a significant visual impact.

The only section of the project with more than a minor impact is thus the second segment where there would be a moderate visual effect on residents. The moderate visual effect of a view of one monopole by residents of three farm workers' homes south of Telegraph Road would be the only potential EJ impact - a moderate and less-than-significant effect. This impact on the EJ population would not be disproportionate, but rather quite small compared to the much higher level of visual exposure to the power plant and transmission line by thousands of motorists from the population at large on SR 126.

CONCLUSIONS

Staff evaluated whether the proposed project would have a significant effect on the environment according to Appendix G of the State CEQA Guidelines and if the project would be in conformance with applicable LORS. Staff concludes the following:

- The proposed project would affect scenic vistas within the Santa Clara Valley Rural Historic district. However, with recommended Visual Resources Condition of Certification **VIS-2** and **Cultural Resources** Conditions of Certification **CUL-9** and **CUL-14**, these effects would not be substantially adverse.
- The proposed project would damage a scenic resource, namely Eucalyptus trees of Ellsworth Barranca and other historic treerows of the rural historic landscape. However, with recommended Conditions of Certification **CUL-9** and **CUL-14**, these effects would not be substantially adverse.
- With recommended Conditions of Certification **VIS-1** and **VIS-2**, the proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings in the long term.
- With recommended Conditions of Certification **VIS-3** and **VIS-4**, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.
- The proposed project's incremental visual effect would not contribute to significant cumulative impacts in combination with past or anticipated future projects.
- Proposed mitigation measures (conditions of certification) would reduce visual impacts to less than significant for all populations, including environmental justice populations represented in **Socioeconomics Figures 1** and **2** and **Table 3** (see the **Socioeconomics** section of this staff assessment).
- The project, as currently proposed, would be in conformance with applicable local LORS pertaining to visual resources with the effective implementation of the applicant's proposed mitigation measures and staff's proposed conditions of certification.

- Site-specific information on proposed project tree removals was requested from the applicant by staff, but data responses to date lack the specificity needed to fully understand the impacts in various locations, particularly at KOP 3. Condition of Certification **VIS-2** calls for site-specific tree surveys and vegetation-management plans, however, needed to provide this understanding and to address potential visual issues under a worst-case scenario.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends the following conditions of certification:

SURFACE TREATMENT OF PROJECT STRUCTURES

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 and contrast by blending with the landscape; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Surface color treatment shall include painting of turbine inlet filters and all other major power plant features, as well as all transmission line monopoles, in a dark green or brown color and value to blend with their visual background and minimize project color contrast as seen from key viewpoints. 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:

1. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

2. A list of each major project structure, building, tank, pipe, and wall; the transmission line structures; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;

3. One set of color brochures or color chips showing each proposed color and finish;

4. 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 Key Observation Points (KOP) 2 and 3 (locations shown on **Visual Resources Figure 5** of the Staff Assessment);

5. A specific schedule for completion of the treatment; and

6. A procedure to ensure proper treatment maintenance for the life of the project.

Protocol: 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 Ventura 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 they are ready for inspection and shall submit one set of electronic color photographs from the same key observation points identified in (d) 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.

TREE REMOVAL, REPLACEMENT, AND SCREENING; VEGETATION MANAGEMENT, TREE PROTECTION, AND LANDSCAPE PLANS

VIS-2 Removal and trimming of trees within the transmission line right-of-way shall be minimized to the greatest feasible extent, as seen from Telegraph and Foothill roads. For example, if orchard plantings within the right-of-way near Foothill Road are of a height that will allow them to remain under CPUC General Order 95 (GO95), they shall remain. If removal is unavoidable, they shall be replaced in place and in kind following construction, in order to block or minimize views down the cleared right-of-way from Telegraph Road and from Foothill Road.

Where historic Eucalyptus trees are affected, replacement in place may not be feasible or effective. In such cases, such as removal or trimming of Eucalyptus trees north of Telegraph Road (or elsewhere) that are identified as contributing elements of the SCVRHD in the **Cultural Resources** section, shall be mitigated as called for under Condition of Certification **CUL-14** (Vegetation Management/Tree Protection Plan), by 2:1 replacement in kind in the area west of the transmission line, in order to minimize long-term visual impacts to the existing setting. Replacements shall be sited so as to screen views of the transmission line and poles from Telegraph Road in the long

term, and to retain the historic visual character of the existing treerows in this location.

If Pole 16 is visually exposed to viewers on Telegraph Road, Eucalyptus planting shall be implemented outside of the minimum 75-foot right-of-way as needed to partially screen Pole 16 from Telegraph Road in the long term and blend visually with the surrounding historic treerow.

Tall shrubs or small trees as allowable under GO95 shall be planted in the transmission right-of-way near the shoulder of Telegraph Road in order to block views from the road up the cleared right-of-way in the long term.

The project owner shall submit to the CPM for review and approval and simultaneously to the county of Ventura for review and comment a tree survey and vegetation management plan whose proper implementation will satisfy these requirements, as described further under Condition of Certification **CUL-9**.

The project owner shall also submit to the CPM for review and approval, and simultaneously to the county of Ventura for review and comment, a detailed landscape plan for the power plant site perimeter, in fulfillment of requirements of County Ordinance Sec. 8109-0.6.4.

The Vegetation Management/Tree Protection Plans shall be coordinated with Condition of Certification **CUL-14**. The plans shall include:

Protocol: 1). A tree survey depicting specific trees to be removed or trimmed within the right-of-way; and a vegetation management plan, at a reasonable scale, covering areas adjoining SR 126, Telegraph Road, and Foothill Road, depicting proposed plantings to screen views from the road of the cleared right-of-way and of Pole 16. The survey and plan shall demonstrate how the screening objectives stated above shall be met.

2) A detailed landscape and irrigation plan, at a reasonable scale, covering the power plant site perimeter.

The plans 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.

A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, suitable native and non-invasive plant species, and local availability of proposed species. 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;

Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project;

A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project; and

One set of 11”x17” color photo-simulations of the proposed landscaping at five years and 20 years after planting, as viewed from the foreground of Telegraph Road west of the right-of-way; and of the power plant site viewed from Shell Road.

The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The landscaping plans shall be developed and submitted at the earliest feasible time during or prior to construction. The landscaping plans shall be submitted to the CPM for review and approval and simultaneously to the county of Ventura for review and comment at least 90 days prior to installation.

If the CPM determines that the plans require revision, the project owner shall provide to the CPM and simultaneously to the county of Ventura a revised plan for review and approval by the CPM.

The planting must occur during the first optimal planting season following site mobilization. The project owner shall simultaneously notify the CPM and the county of Ventura within seven days after completing installation of the landscaping, that the landscaping is ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report. The county of Ventura, with the concurrence of the CPM, shall have authority to require replacement planting of dead or dying vegetation through the life of the project.

SITE LIGHTING – PROJECT DEMOLITION, CONSTRUCTION, AND COMMISSIONING

VIS-3 Consistent with applicable worker safety regulations, the project owner shall ensure that lighting of on-site demolition and construction areas, and construction worker parking lots, minimizes potential night lighting impacts by implementing the following measures:

A. All fixed-position lighting shall be hooded and shielded to direct light downward and toward the construction area to be illuminated to prevent illumination of the night sky and minimize light trespass (i.e., direct light extending beyond the boundaries of the parking lots and construction sites, including any security-related boundaries).

B. Lighting of any tall construction equipment (e.g., scaffolding, derrick cranes, etc.) shall be directed toward areas requiring illumination and shielded to the maximum extent practicable.

C. Task-specific lighting shall be used to the maximum extent practicable.

D. Wherever and whenever feasible, lighting shall be kept off when not in use and motion sensors shall be installed and used to the maximum extent practicable.

E. The CPM shall be notified of any demolition- and construction-related lighting complaints. Complaints shall be documented using a form in the format shown in Attachment 1, and completed forms shall record resolution of each complaint. A copy of each completed complaint form shall be provided to the CPM. Records of lighting complaints shall also be kept in the compliance file at the project site.

Verification: Verification: Within seven calendar days after the first use of construction and demolition lighting, the project owner shall notify the CPM that the lighting is ready for inspection. If the CPM determines that modifications to the lighting are needed for any construction milestone, within 14 calendar days of receiving that notification, the project owner shall correct the lighting and notify the CPM that modifications have been completed. Within 48 hours of receiving a lighting complaint for any construction activity, the project owner shall provide to the CPM a copy of the complaint report and resolution form, including a schedule for implementing corrective measures to resolve the complaint. The project owner shall report any lighting complaints and document their resolution in the Monthly Compliance Report for the project, accompanied by copies of completed complaint report and resolution forms for that month.

LIGHTING MANAGEMENT PLAN – PROJECT OPERATION

VIS-4 The project owner shall prepare and implement a comprehensive Lighting Management Plan. The comprehensive Lighting Management Plan shall be submitted to the CPM, and the Planning Director of the county of Ventura for simultaneous review and comment. Any comments on the plan from the county shall be provided to the CPM. The project owner shall not purchase or order any lighting fixtures or apparatus until written approval of the final plan is received from the CPM. Modifications to the Lighting Management Plan are prohibited without the CPM's approval.

Consistent with applicable worker safety regulations, the project owner shall design, install, and maintain all permanent exterior lighting such that light sources are not directly visible from areas beyond the project site, glare is avoided, and night lighting impacts are minimized or avoided to the maximum extent feasible. All lighting fixtures shall be selected to achieve high energy efficiency for the facility. The project owner shall meet these requirements for permanent project lighting:

A. The Lighting Management Plan shall include three printed sets of full size plans (24" x 36", minimum), three sets of 11" x 17" reductions,

B. A digital copy in PDF format, and contain the following information.

C. The Lighting Management Plan shall be prepared with the direct involvement of a certified lighting professional trained to integrate efficient technologies and designs into lighting systems.

D. Exterior lights shall be hooded and shielded and directed downward or toward the area to be illuminated to prevent obtrusive spill light (i.e., light trespass) beyond the project site.

E. Exterior lighting shall be designed to minimize backscatter to the night sky to the maximum extent feasible.

F. Exterior lighting shall utilize fully-shielded luminaires, and conform generally to International Dark-Sky Association recommendations for lighting zone LZ1.

G. Energy efficient lighting products and systems shall be used for all permanent new lighting installations. Smart bi-level exterior lighting using high efficiency directional LED fixtures shall be used as appropriate for exterior installations. The lighting system shall work in conjunction with occupancy sensors, photo sensors, wireless controls, and/or other scheduling or controls technologies to provide adequate light for security and maximize energy savings.

H. Lighting fixtures shall be kept in good working order and continuously maintained according to the original design standards.

I. The Lighting Management Plan shall be consistent with all applicable laws, ordinances, regulations, and standards. The CPM shall be notified of any complaints about permanent lighting at the project site. Complaints shall be documented using a form in the format shown in Attachment 1, and completed forms shall record resolution of each complaint. A copy of each completed complaint form shall be provided to the CPM. Records of lighting complaints shall also be kept in the compliance file at the project site.

Verification: At least 90 calendar days before ordering any permanent lighting equipment for the project, the project owner shall submit the comprehensive Lighting Management Plan to the CPM and the Planning Director of the county of Ventura for simultaneous review and comment. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the city requesting their review of the Lighting Management Plan. The CPM shall deem the Lighting Management Plan acceptable to the county of Ventura if comments are not provided to the CPM within 45 calendar days of receipt of said plan.

If the CPM determines that the plan requires revision, the project owner shall provide a plan with the specified revision(s) for review and approval by the CPM. A copy of the revised plan shall be provided to the Planning Director of the county of Ventura. No work to implement the plan (e.g., purchasing of fixtures) shall begin until final plan approval is received from the CPM.

Prior to the start of commercial operation of the project, the project owner shall notify the CPM that installation of permanent lighting for the project has been completed and

that the lighting is ready for inspection. If the CPM notifies the project owner that modifications to the lighting system are required, within 30 days of receiving that notification, the project owner shall implement all specified changes and notify the CPM that the modified lighting system(s) is ready for inspection.

Within 48 hours of receiving a complaint about permanent project lighting, the project owner shall provide to the CPM a copy of the complaint report and resolution form, including a schedule for implementing corrective measures to resolve the complaint.

The project owner shall report any complaints about permanent lighting and document their resolution in the Annual Compliance Report for the project, accompanied by copies of completed complaint report and resolution forms for that year. 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.

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Visual Resources Appendix-1
Visual Resources Terms, Definitions, and Analysis Method

This appendix is divided into two main sections. The first section defines key terms and describes the method used by Energy Commission staff (staff) to evaluate effects of a project on visual resources. The second section describes the process to evaluate effects of publicly visible water vapor plumes on visual resources.

Staff conducted a preliminary analysis of the proposed project's exhaust gas characteristics and ambient air conditions and determined that conditions would be unlikely to cause formation of visible plumes above the project's exhaust stack. Therefore, the section of this appendix pertaining to visible plumes is not applicable to the proposed project.

KEY TERMS AND ANALYSIS METHOD

VISUAL SPHERE OF INFLUENCE AND DISTANCE ZONES

The *visual sphere of influence* (VSOI) depicts the area within which the proposed project could cause significant impacts on visual resources. The extent of the VSOI will vary depending on the project setting, topography, and the presence or absence of natural or built screening, and it must be determined on a case-by-case basis. For projects in urban settings, visibility of a project site may be limited to specific vantage points in the VSOI. For projects in relatively open areas, a project site may be visible throughout most of the VSOI.

A VSOI boundary may be refined to account for local viewing conditions and topographic screening based on computer *viewshed* analysis and mapping, which is a useful way to determine project visibility and to communicate that information to others. A viewshed is the surface area visible from a given viewpoint or series of viewpoints. It is also the area from which that viewpoint or series of viewpoints may be seen. At a basic level, a viewshed is a plan view or map of areas with an unobstructed sightline to a single observer viewpoint (Federal Highway Administration 1990).

The VSOI may be mapped up to a distance of approximately five miles from a project site. At the limits of the VSOI, distant background features may blend together such that they would not be especially discernible to the viewer.

Visual resource management guidelines and methods established by federal agencies are often adapted and used by staff to evaluate the impacts of a project on visual resources. The visual management system of the U.S. Forest Service uses distance zones to describe parts of a characteristic landscape that is subject to inventory and evaluation (Bacon 1979). The Federal Highway Administration (FHWA) uses similar descriptions for distance zones (FHWA 1990). Staff includes a discussion of distance zones to describe views of the project site from parts of the VSOI, which are described as follows:

- **Foreground**. This zone will usually be limited to areas within one-quarter to one-half mile of the observer, but must be determined on a case-by-case basis as should any distance zoning. The limit of this zone is based on distances at which details can be perceived. For example, the viewer may see the texture and form of individual plants or tree boughs. Intensity of color and its value will be at a maximum level.
- **Middleground**. This zone may extend from the foreground zone to three to five miles from the observer. Texture is generally characterized by masses of trees in stands of uniform tree cover. Parts of the landscape may be seen to join together; hills become a range or trees appear as a forest. Individual tree forms are usually only discernible in very open or sparse stands.
- **Background**. This zone may extend from the middleground zone to infinity. The surfaces of land forms lose detail distinctions, and the emphasis is on the outline or edge of the land forms. The texture in stands of uniform tree cover is generally very weak or nonexistent. In open or sparse timber stands, texture is seen as groups or patterns of trees. Atmospheric haze may diminish colors, soften features, and reduce contrast in background views.

Visual elements closer to the viewer will be in the foreground or middleground. Visual elements at the limits of the project VSOI will generally be those that appear in the background.

VISUAL ABSORPTION CAPABILITY

Visual absorption capability (VAC) provides an additional perspective on the landscape and its capacity to visually withstand or absorb changes from a project. VAC is an estimate or measure of the capacity of a landscape to absorb visual alterations without significantly affecting visual character (Bacon 1979). High VAC may be associated with varied, undulating landforms and varied vegetation canopy. Low VAC may be associated with a uniform landscape, an even tree canopy, and steep slopes. (As the upward slope increases, a greater area of land becomes directly visible and any intervening vegetation loses the potential to screen the activity.)

SELECTION OF KEY OBSERVATION POINTS

Sensitive viewing areas are identified and inventoried in the VSOI for a project where project structures and facilities could be visible to the public. A list of sensitive viewing areas could include several types of uses:

- residential;
- recreational, including wildlife areas, parks, visitor centers, hiking trails, and other recreation areas;
- travel routes, including major roads or highways and designated scenic roads; and
- tourist destinations, including historic landmarks and other protected natural and built features in the landscape.

Refinement of the visual analysis for a project involves identifying critical viewpoints, or key observation points (KOPs). KOPs are selected to represent the most critical viewpoints from off-site locations where a project would be visible to the public.

Because it is infeasible to analyze all viewpoints, KOPs are selected that would most clearly display the visual effects of the proposed project. A KOP may also represent a primary viewer group(s) (e.g., motorists on a highway in the project area) that could potentially be affected by a project.

Following selection of the KOPs, photographs are taken of the project site to show existing conditions from the KOPs. The existing condition (baseline) photographs taken from the selected KOPs are used to prepare representative visual simulations of the proposed project or specific project feature. The simulations portray the relative scale and extent of the project. The photograph of the existing condition and the visual simulation (proposed condition) are reviewed for each KOP to determine the potential effects of a project on visual resources.

PROCESS TO EVALUATE KEY OBSERVATION POINTS

VISUAL SENSITIVITY (EXISTING CONDITION)

Steps to evaluate the overall visual sensitivity for each KOP involve consideration of several key factors: *visual quality, viewer concern, visibility, number of viewers,* and *duration of view*. In a project analysis, the rating scale ranges from low to high for each factor. These factors are also used to convey the overall scenic value of the view from each representative KOP. The five factors are described below. (Diagram 1 [below] illustrates the process to evaluate the KOPs and determine impact significance.)

VISUAL QUALITY

Visual quality is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the visual resource. The visual quality of an area is composed of visual or scenic resources, which are those physical features that make up the visible landscape, including land, water, vegetation, and the built environment (e.g., buildings, roadways, irrigation canals, and other structures). Scenic resources that compose scenic views and sites are generally valued for their aesthetic appearance. Using staff's visual resources analysis method, visual quality is generally rated from low to high.

Memorable or visually powerful landscapes are generally rated high when the landscape components combine in striking or distinctive visual patterns. Landscapes with high visual quality are visually coherent and harmonious when each element is considered as part of the whole. The landscapes are free from encroaching elements and thus retain their visual integrity. Landscapes rated low are often dominated by visually discordant built elements. **Table 1** describes a set of ratings associated with an assessment of visual quality.

Table 1
Landscape Scenic Quality Scale

Rating	Description
Outstanding Visual Quality	This rating describes landscapes with exceptionally high visual quality. These landscapes are often significant regionally and/or nationally, and they usually contain exceptional natural or cultural features that contribute to this rating. They might be described as "picture-postcard" landscapes. People are attracted to these landscapes to view them. These landscapes are often managed in a manner to ensure preservation of the inherent qualities of the landscape.
High Visual Quality	Landscapes with high visual quality may contain cultural or natural features in the landscape that attest to their value. These landscapes often contain visually interesting spaces and elements that are arranged in ways that make them particularly pleasant places to be. Areas with high visual quality often provide recreational opportunities where the visual experience is important. These landscapes are often managed to emphasize preservation of the inherent qualities of the landscape.
Moderately High Visual Quality	These landscapes have above average scenic value but do not possess all of the qualities associated with places that are rated high. The scenic value of these landscapes may be lower due to the less interesting arrangement of landscape elements. These landscapes may have recreational potential, and visual quality is an important management concern.
Moderate Visual Quality	These landscapes have average scenic value and are not especially memorable. They usually lack noteworthy cultural or natural features. These landscapes may have considerable recreational potential and visual quality is a management consideration.
Moderately Low Visual Quality	These landscapes have below average scenic value. They may contain visually discordant built elements, but the landscape is not dominated by these features. They often provide little visual interest and lack spaces that people will perceive as inviting. Recreational activities may occur in areas with below average scenic value, but the visual experience for recreationists is less important in these areas. Management concerns for visual quality may be limited to minimizing the adverse visual impacts of resource management activities or projects.
Low Visual Quality	Landscapes with low scenic value may be dominated by visually discordant built elements. They do not include places that people will find inviting, and lack attributes that make areas with higher quality views memorable and visually interesting. These landscapes often have little recreational potential. Management concerns for visual quality may either address rehabilitation of visually discordant built elements or are limited to minimizing the adverse visual impacts of resource management activities or projects.
Source: Adapted from Buhyoff et al., 1994	

Viewer Concern

Viewer concern represents the estimated reaction of a viewer or viewer group to visible changes in the view. Viewer concern will vary depending on the characteristics and preferences of the viewer group. An assessment of viewer concern can be made based on the extent of the public's concern for a particular landscape or for scenic quality in general. Existing discordant elements in the landscape may temper viewer concern.

Viewer concern for homeowners or other local residents is expected to be high for views near their homes. Viewers engaging in recreational activities and enjoying scenic surroundings are generally expected to be highly concerned about potential degradation of the existing visual quality and character of their views.

Viewer activity is an identifying characteristic of viewer groups (FHWA 1990). Commuting in heavy traffic can distract an observer from many aspects of the visual environment; therefore, viewer concern tends to be lower for views seen by people driving to and from work or as part of their work. Employees, managers, and patrons of businesses may have extended and repeated views of their surroundings on a daily basis. This viewer group may have lower expectations for visual elements in the VSOI than residents and recreationists.

The viewer concern of motorists generally depends on when and where travel occurs, the angle of view, the view distance, and the frequency of travel of the motorist in a particular area. As the observer's speed increases, the sharpness of lateral vision declines, and the observer tends to focus along the line of travel. It is assumed that motorists on freeway systems during periods of free flow travel have a low to moderate viewer concern. Daily commuters using inner city freeways in heavy traffic are primarily focused on traffic and roadway conditions along the travel corridor. Commuters traveling at normal freeway speeds are generally more aware of views from the freeway. Motorists driving for pleasure are expected to have a higher concern for view. Motorists who are local residents and/or business owners may have a higher viewer concern due to their personal investment in the area and greater familiarity with the local environment.

In urban and semi-rural settings, individual viewers are likely to include employees and managers working in offices and commercial and industrial businesses. In rural and semi-rural areas, individual viewers may include people employed in agricultural, industrial, and commercial businesses. For viewers whose focus is on their work and daily pursuits, viewer concern is generally expected to be low to moderate. However, this rating will vary depending on the existing visual quality of the landscape and built environment.

Scenic roadways, cultural features, or other areas identified in adopted land use planning documents are subject to protection. The scenic qualities of protected resources are recognized for their value to the public, and the expectation of viewers is that views of protected resources will be preserved.

Visibility

An assessment of visibility addresses how well the project site or feature can be seen from a particular location. The degree of visibility generally depends on the angle or direction of view; extent of visual screening provided by built and/or natural elements; topography; and the distance between the object (i.e., the project site) and existing homes, streets, or parks. In this sense, visibility is determined by considering any and all obstructions that may be in the sightline, including trees and other vegetation, buildings, hills, and transmission poles.

Number of Viewers

This is an estimate of the number of viewers who may see the project site or feature. The estimate is based on the number of residences, the average traffic volume on local roads and highways, and the number of recreational users per day (e.g., the number of people participating in any recreational activity during a 24-hour period). Traffic volume is based on data such as average daily vehicle trips (ADT) or annual average daily vehicle trips (AADT).

For recreational users, the number of viewers is closely tied to visual quality and viewer concern. For recreationists engaged in activities where visual quality is on the higher end of the scale, the number of viewers is carefully considered in the visual assessment. For example, a recreational area in an area with a high visual quality rating may receive a higher rating overall regardless of the number of viewers. For example, a visual change at a national park is generally more important than a visual change near a large sports stadium.

Table 2 shows ratings based on estimated numbers of viewers. Variations in viewer preferences and existing visual quality will influence these ratings.

Table 2
Approximate Number of Viewers By Viewer Category and Corresponding Rating

Residential (number of residences	Recreationists (number of people per day)	Motorists (number of motor vehicles per day)	Rating
Over 100	Over 200	Over 10,000	High
50–100	100–200	5,000–10,000	Moderate to High
20–50	50–100	2,500–5,000	Moderate
5–20	25–50	500–2,500	Low to Moderate
2–5	10–25	125–500	Low
Source: Energy Commission staff			

Duration of View

Duration of view is the estimated length of time a project site is viewed by a person or group of people. The importance of view duration varies depending on the activities of the viewers. Duration of view is generally less of a concern when the viewer only briefly glimpses the visible feature or site. However, if the site is subject to viewing for a longer period, as from a scenic overlook, then duration of view is a factor of greater importance. Residential viewers typically have the longest duration of view. A resident with a direct view of a project site might have views lasting for extended periods depending on the orientation of the residence and the extent of visual screening.

For motorists, the duration of view depends on the speed of travel, view distance, and angle of observation. For a motorist traveling at 60 miles per hour on a highway with a direct view of a project site, and where the initial point of visibility is approximately one mile away, the viewer might see the site for a continuous 60-second period.

The duration of view for recreationists will vary depending on whether the recreational activity is *active* or *passive*. Active recreation involves direct participation in a sport or play activity, which typically requires the use of an organized space (e.g., off-road bike trails or a team sports field). A view of a proposed project by people observing or engaging in active recreation is estimated to be of short duration. People engaging in recreational activities under these conditions are likely to be focused on the sport rather than the aesthetics of the environment.

Passive recreation often involves low impact activities or observation and does not require use of an organized play or sports area. Viewers are more closely associated with the surrounding physical environment where the activity takes place. Typical activities include climbing, hiking, wildlife observation, fishing, and picnicking. A view of a proposed project by an individual engaged in passive recreation is estimated to be of longer duration than for someone participating in active recreation.

Table 3 provides a baseline to determine the ratings associated with view duration. As with number of viewers, variations in viewer preferences and existing visual quality will influence the relative importance of the ratings for duration of view.

Table 3
Approximate Duration of View and Corresponding Rating

Approximate Duration of View	Rating
Longer than 2 minutes	High (extended period of time)
1–2 minutes	Moderate to High
20–60 seconds	Moderate (mid-length period of time)
10–20 seconds	Low to Moderate
Less than 10 seconds	Low (brief period of time)
Source: Energy Commission staff	

Overall Viewer Exposure

Overall viewer exposure is based on *visibility*, *number of viewers*, and *duration of view*. These three factors are generally given equal weight in determining overall viewer exposure. However, additional weight is given to any factor with an extreme value. For example, if a project's visibility is very limited because it would be almost entirely screened from public view, staff gives a lower value to overall viewer exposure.

Overall Visual Sensitivity

Overall visual sensitivity is based on *visual quality*, *viewer concern*, and *overall viewer exposure*. These three factors are generally given equal weight in determining the level of overall visual sensitivity.

VISUAL CHANGE (PROPOSED CONDITION)

The visual change for each KOP is described using the terms *contrast*, *dominance*, and *view blockage*. The scale for rating the visual change ranges from low to high for each factor. The three factors used to evaluate visual change are described below.

Contrast

The degree to which a project could affect the visual quality of a landscape generally depends on the visual contrast created between a project and the existing landscape (U.S. Bureau of Land Management 1986 and 2012). The basic design elements of form, line, color, and texture are used for this comparison and to describe the visual contrast created by a project:

- **Form**. Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those that exist in the landscape.
- **Line**. Contrasts in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their subelements (e.g., boldness, complexity, and orientation) from existing lines.
- **Color**. Changes in value, or a gradation or variety of a color (hue) tend to create the greatest contrast. Other factors such as saturation of a color, reflectivity, color temperature, may also increase the contrast.
- **Texture**. Noticeable contrast in texture usually stems from differences in the grain, density, and internal contrast. Other factors such as irregularity and directional patterns of texture may affect the rating.

Projects designed to repeat forms, lines, colors, and textures as those present in the existing landscape will generally be less noticeable. (See also the discussion above under “Visual Absorption Capability.”) **Table 4** provides a baseline for the degree of contrast rating.

Table 4
Degree of Contrast and Corresponding Rating

Criteria	Rating
The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	High (strong)
	Moderate to High
The element contrast begins to attract attention and begins to dominate the characteristic landscape.	Moderate
The element contrast can be seen but does not attract attention.	Low to Moderate (weak)
	Low
The element contrast is not visible or perceived.	None
Source: Adapted from U.S. Bureau of Land Management 1986	

Dominance

Dominance is a measure of (a) the proportion of the total field of view that the proposed feature occupies, (b) a proposed feature's apparent size relative to other visible landscape features, and (c) the conspicuousness of the proposed feature due to its location in the view. Also, forms that are bold, regular, solid, or vertical will tend to dominate the landscape.

A proposed feature's level of dominance may be lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. A feature's level of dominance is higher if it is (a) near the center of the view, (b) elevated relative to the viewer, or (c) has the sky as a backdrop. As the distance between a viewer and a feature increases, the feature's apparent size decreases and its dominance decreases as a consequence. The level of dominance is rated from low (subordinate) to high (dominant).

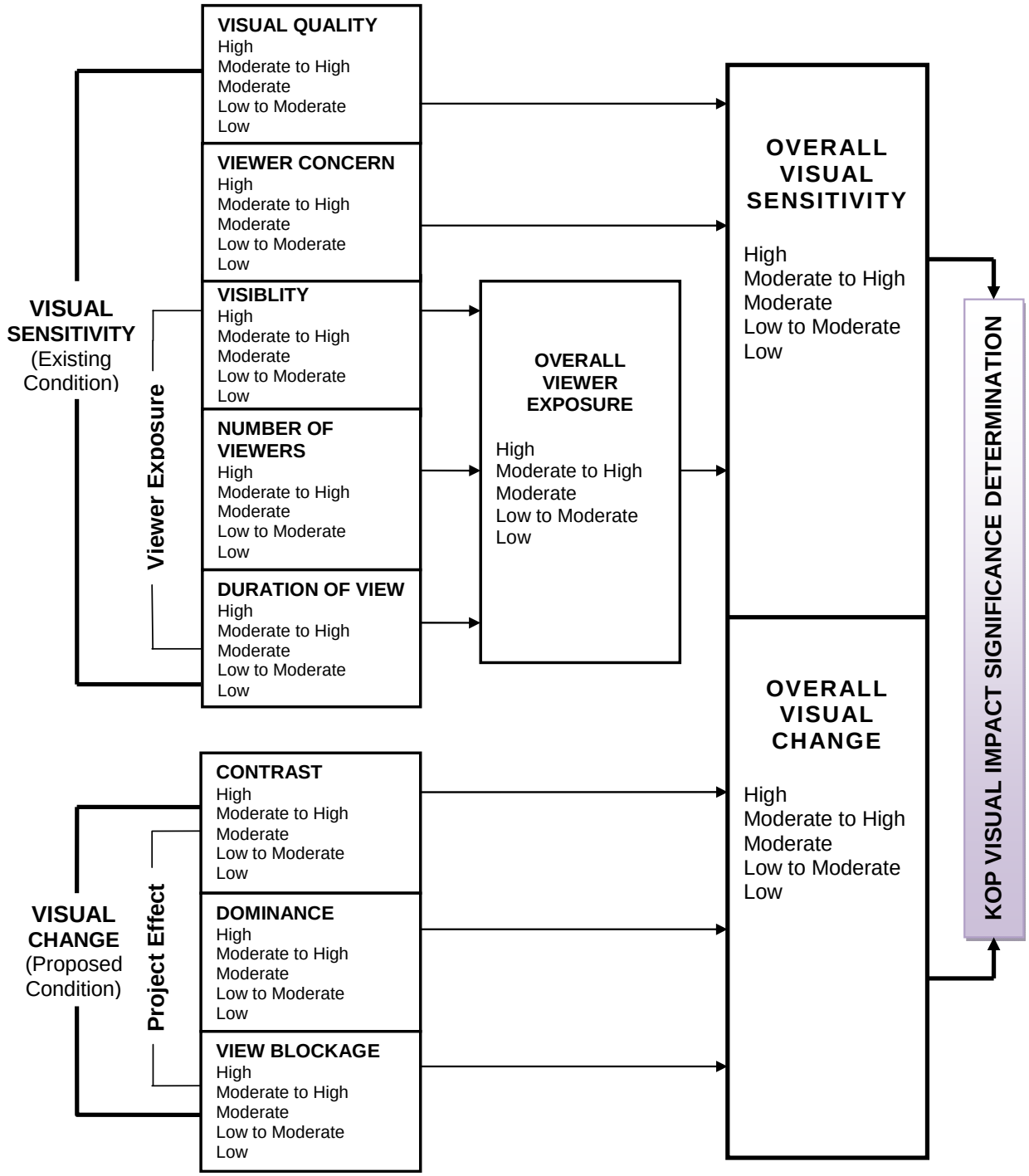
View Blockage

View blockage is the extent to which an existing publicly visible landscape feature (built or natural elements) would be blocked from view by the proposed project. The view is also disrupted when the continuity of the view is interrupted. Higher quality landscape features can be disrupted by the introduction of lower quality features into the view. The degree of view blockage is rated from low to high.

Overall Visual Change

Overall visual change is based on *contrast*, *dominance*, and *view blockage*. These factors are given equal weight in an assessment of overall visual change. Overall visual change is rated from low to high.

VISUAL RESOURCES Diagram 1- Key Observation Point Evaluation



Visual Resources Diagram 2 – Key Observation Point Evaluation Matrix and Visual Impact Determination Conclusions

KOP	Visual Sensitivity (Existing Condition)							Visual Change (Proposed Condition)				Visual Impact Determination
			Viewer Exposure									
	Visual Quality	Viewer Concern	Visibility	Number of Viewers	Duration of View	Overall Viewer Exposure[1]	Overall Visual Sensitivity[2]	Contrast	Dominance	View Blockage	Overall Visual Change[3]	Overall Visual Sensitivity+ Overall Visual Change[4]
1 View of Power Plant from SR 126	Moderate	Moderate to High	Low to Moderate	High	Low to Moderate	Low to Moderate	Moderate	Moderate	Low to Moderate	Low	Low to Moderate	Less Than Significant
2 View of Tie-Line from SR 126	Moderate to High	Moderate to High	Low to Moderate	High	Low	Low to Moderate	Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Less Than Significant
3 View of Tie-Line from Telegraph Road	Moderate to High	Moderate to High	Moderate	Moderate	Low to Moderate	Moderate	Moderate to High Moderate with Mitigation	Moderate; to Moderate to High, depending on extent of impacts	Moderate; to Moderate to High, depending on extent of impacts	Low to moderate	Moderate; to Moderate to High, depending on extent of impacts	**Potentially Significant** **Less Than Significant with Mitigation**
4 View of Tie-Line from Foothill Road	Moderate to High	Moderate to High	Low to Moderate	Moderate	Low to Moderate	Low to Moderate	Moderate	Moderate	Moderate	Low to moderate	Moderate	Less Than Significant

Notes: High = 5 Moderate to High = 4 Moderate = 3 Low to Moderate = 2 Low = 1

[1] Visibility + Number of Viewers + Duration of View ÷ 3 = Overall Viewer Exposure

[2] Visual Quality + Viewer Concern + Overall Viewer Exposure ÷ 3 = Overall Visual Sensitivity

[3] Contrast + Dominance + View Blockage ÷ 3 = Overall Visual Change

[4] Overall Visual Sensitivity + Overall Visual Change = Visual Impact Determination (see Table 5 in Appendix VR-1)

VISUAL IMPACT SIGNIFICANCE DETERMINATION

Visual impact significance is based on the ratings for *overall visual sensitivity* and *overall visual change*. The ratings for overall visual sensitivity and overall visual change are combined to determine significance of the visual impact for each KOP (**Table 5**).

Table 5
KOP Visual Impact Significance Determination

Overall Visual Sensitivity	Overall Visual Change				
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**
High	Significant	Significant	Significant	Less Than Significant	Less Than Significant
Moderate to High	Significant	Significant	Potentially Significant	Less Than Significant	Less Than Significant
Moderate	Significant	Potentially Significant	Less Than Significant	Less Than Significant	Less Than Significant
Low to Moderate	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	No Impact
Low	Less Than Significant	Less Than Significant	Less Than Significant	No Impact	No Impact

Notes:

"Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (Cal. Code Regs., tit. 14, § 15382). Implementation of mitigation measures may or may not avoid the impact or reduce it to a less-than-significant level.

CEQA does not require mitigation for less-than-significant impacts.

PUBLICLY VISIBLE WATER VAPOR PLUMES

When a thermal power generation facility with a cooling tower[1] is operated at times when the ambient temperature is low and relative humidity is high, the warm moisture (water vapor) that is discharged from the cooling tower condenses as it mixes with cooler ambient air, resulting in creation of a visible plume. The publicly visible plume could substantially degrade the existing visual character or quality of the project site and its surroundings, potentially causing a significant impact to visual resources.

Computer modeling is used to estimate the frequency and size of the vapor plume(s) for a power plant project. If the plume modeling analysis results in a conclusion that plume frequency is greater than 20 percent, staff prepares an analysis of the vapor plume's potential effects on visual resources in the VSOI for the project.

Staff established a 20th percentile plume frequency during *seasonal* (November through April) *daylight clear* hours (i.e., no rain/fog high visual contrast hours) as a reasonable worst-case scenario. It is during high visual contrast viewing hours ("clear sky")

[1] Other types of thermal power generation facilities are also sources of visible water vapor plumes, including combined cycle gas turbine exhausts and geothermal steam exhausts. These facilities are evaluated in the same manner as cooling tower plumes.

conditions that water vapor plumes show the greatest contrast with the sky. Water vapor plumes emitted during rain and fog conditions and under some cloud conditions (e.g., marine layer) or at nighttime would not introduce substantial visual contrast into the environment. Staff has included in the *clear* category:

a) all hours with sky cover equal to or less than 10 percent, and

b) half of the hours with total sky cover of 20–90 percent.

The rationale for including these two components in this category is as follows:

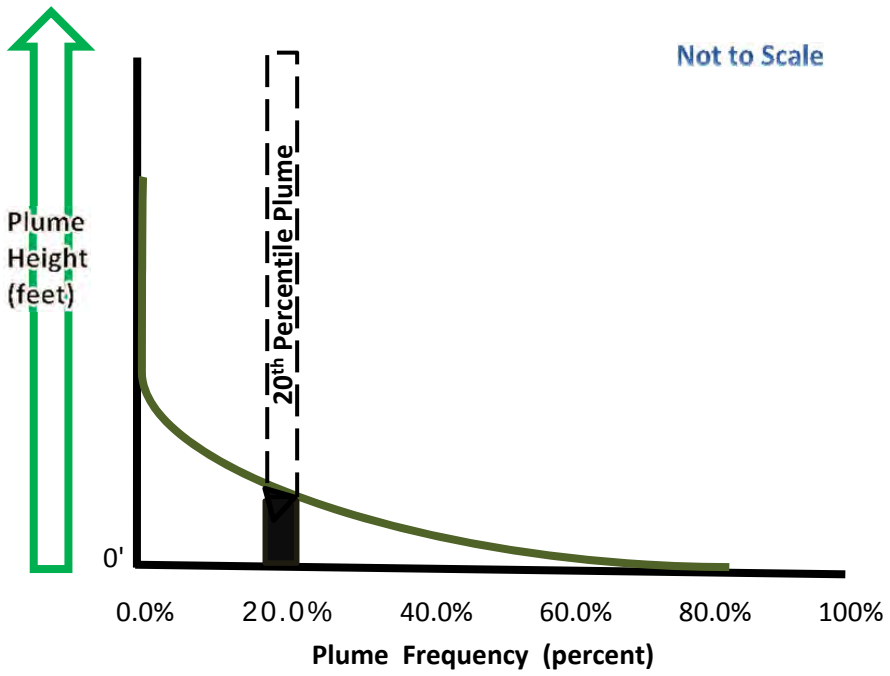
a) Visible plumes typically contrast most with sky under clear conditions, and when total sky cover is equal to or less than 10 percent, clouds either do not exist or they make up such a small proportion of the sky that conditions appear to be virtually clear.

b) For a substantial portion of the time when total sky cover is 20–90 percent, the opacity of sky cover is relatively low (equal to or less than 50 percent), so this sky cover does not always substantially reduce contrast with visible plumes; staff has estimated that approximately half of the hours meeting the latter sky cover criteria can be considered high visual contrast hours and are included in the “clear sky” definition.

Plume frequency is calculated on the six-month portion of the year when the ambient conditions are such that visible water vapor plumes are most likely to occur. This maximum six-month “seasonal” period for plume formation generally occurs between November and April when temperatures are cool or cold, and relative humidity is high.

Staff uses the Combustion Stack Visible Plume (CSVP) model to estimate plume frequency and plume size. If the CSVP modeling conducted for the proposed project’s cooling tower predicts a *seasonal daylight clear* hour plume frequency of 20 percent or greater, staff evaluates the *20th percentile plume* in the visual resources analysis. (Discussions of visible water vapor plumes are presented in the Visual Resources section of staff assessments.) Staff considers the 20th percentile plume to be the reasonable worst-case plume dimension for the purpose of analysis. Publicly visible plumes that occur more than 20 percent of the time would be more frequent but smaller in size than those that occur less than 20 percent of the time. This approach recognizes that the largest plumes would occur very rarely, while the most frequent plumes and even the average plumes would be much smaller in size. For example, using a scale of 0 to 100, a one percentile plume would be extremely large, very noticeable to a wide area, but would occur very infrequently. A 100th percentile plume would be nonexistent (see Diagram 2 below). If the modeled publicly visible plume is predicted to occur less than 20 percent of seasonal daylight clear hours, the impact to the existing visual character or quality of the project site and its surroundings is generally considered less than significant, and it is not considered further in the visual resources analysis.

Visual Resources Diagram 2 – Visible Plume Height/Frequency Curve



A plume frequency of 20% represents staff's threshold for conducting a detailed plume analysis.

In the evaluation of the visual effects of the modeled 20th percentile plume, staff addresses the *overall visual sensitivity* for the existing condition and the potential *overall visual change* created by the plume's degree of contrast, level of dominance, and view blockage from the selected KOPs (see Visual Resources Diagram 1).

PUBLICLY VISIBLE WATER VAPOR PLUME ABATEMENT METHODS

Staff has identified four methods to lower a plume's frequency or eliminate the plume completely.

Increase Cooling Tower Air Flow

Increasing the cooling tower air flow will lower the exhaust temperature and reduce plume frequency but would not eliminate the potential for visible water vapor plumes under all conditions. This method focuses on the design of the cooling tower fan flow capacity versus the amount of heat rejected in the cooling tower. Any specific cooling tower design needs to be fully modeled to determine the effective final plume frequency reductions.

Wet/Dry Cooling Tower

This type of cooling tower reduces plume formation by adding heat or heated ambient air to the saturated wet cooling section exhaust to reduce its saturation level. The

saturated exhaust can be heated using a separate dry module above the wet cooling tower. Alternatively, outside air can be pulled into separate areas where a dry section heats the air to reduce humidity and a wet section creates warm, humid exhaust. The heated ambient air and humid exhaust are mixed to reduce the humidity of the combined exhaust steam to avoid creating a plume when meeting ambient air.

The amount of plume reduction that can be accomplished by this type of system can vary from a relatively moderate reduction to a significant reduction in visible plume frequency. The specific wet/dry design would be based on the desired degree of plume reduction.

Wet Surface Air Cooler

The basic operating principle of a wet surface air cooler (WSAC) is rejection of heat by evaporation. The WSAC technology is similar to a wet/dry cooling tower. Where this system is different is that it could eliminate the need for a heat exchanger. The cooling fluid(s) used for the intercooler and any auxiliary cooling systems could be piped directly into the WSAC, which can operate as a non-contact heat rejection system with the use of water sprayed over the cooling pipes to increase the heat rejection when necessary. The expected hot temperature of the cooling fluid would increase the efficiency of this type of system. There may still be the potential for plumes to form under high cooling load periods during certain ambient conditions, but the WSAC could be designed, such as for wet/dry operation depending on cooling load, to maintain a minimal plume frequency well below 20 percent during “clear hours.”

Air Cooled Condenser (Dry Cooling)

The use of an air cooled condenser (ACC) would eliminate the formation of a publicly visible water vapor plume. Air cooled condensers condense exhaust steam from the steam turbine and return condensate to the boiler to perform this function. Steam enters the air cooled condenser above the heat exchangers, flows downward through the heat exchanger tubes, where it condenses and is captured in pipes at the base of the heat exchangers. The condensate is then returned to the boiler water system. Mechanical fans force air over the heat exchangers.

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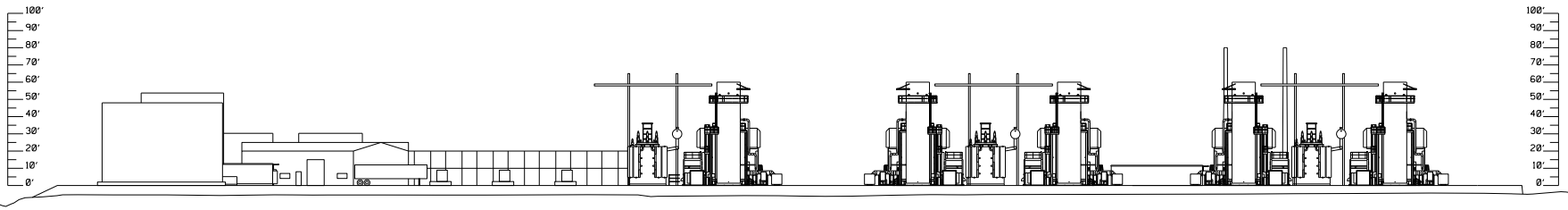
VISUAL RESOURCES - FIGURE 1

Mission Rock Energy Center - Architectural Elevations



ELEVATION VIEW LOOKING SOUTH

ELEVATION VIEW LOOKING EAST

INFORMATION ONLY
NOT TO BE USED
FOR CONSTRUCTION

1" = 30' 0 30 60 90
Scale Feet
SCALE REFERENCE

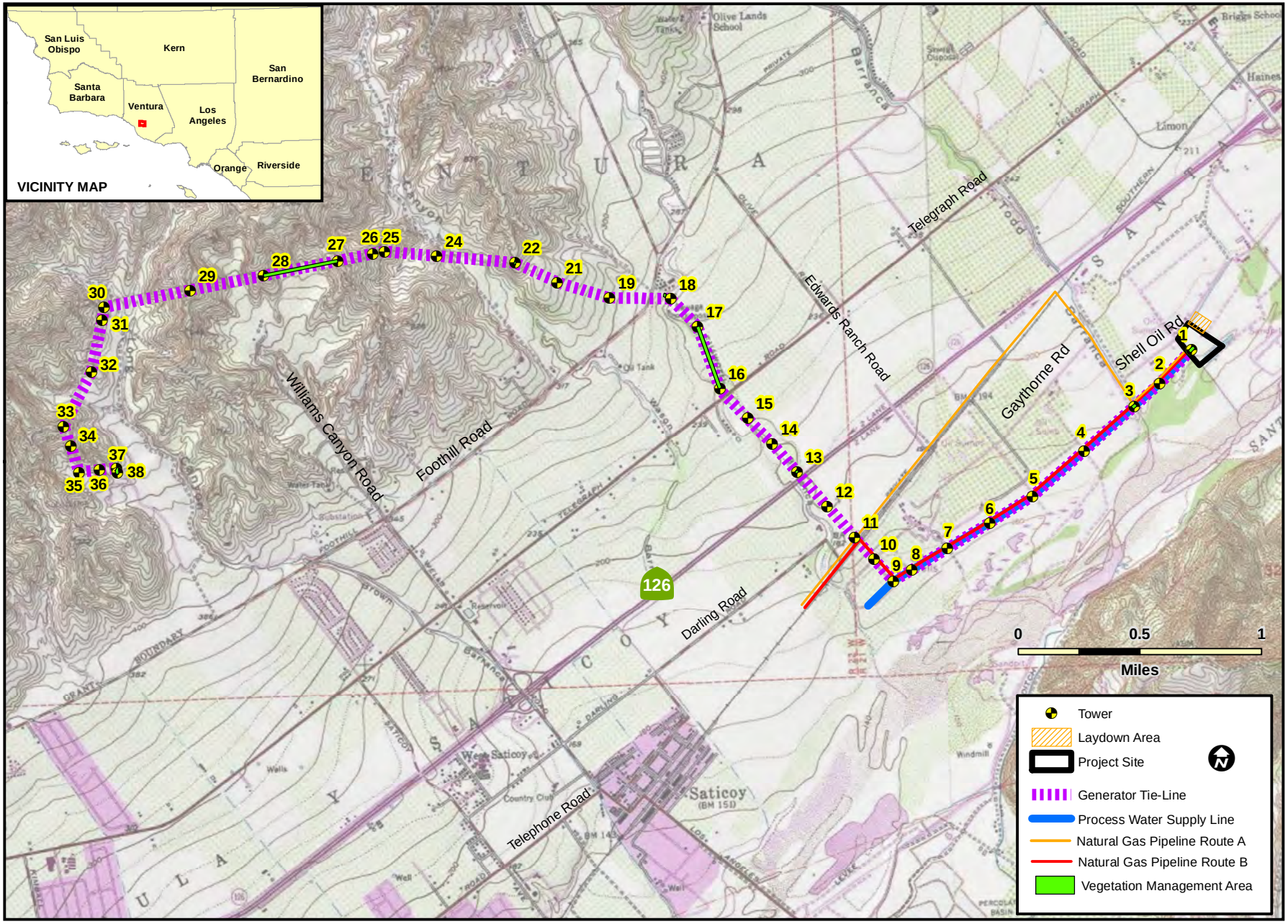
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.1-2

VISUAL RESOURCES - FIGURE 2

Mission Rock Energy Center - Proposed Tie-Line Route



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, CH2M

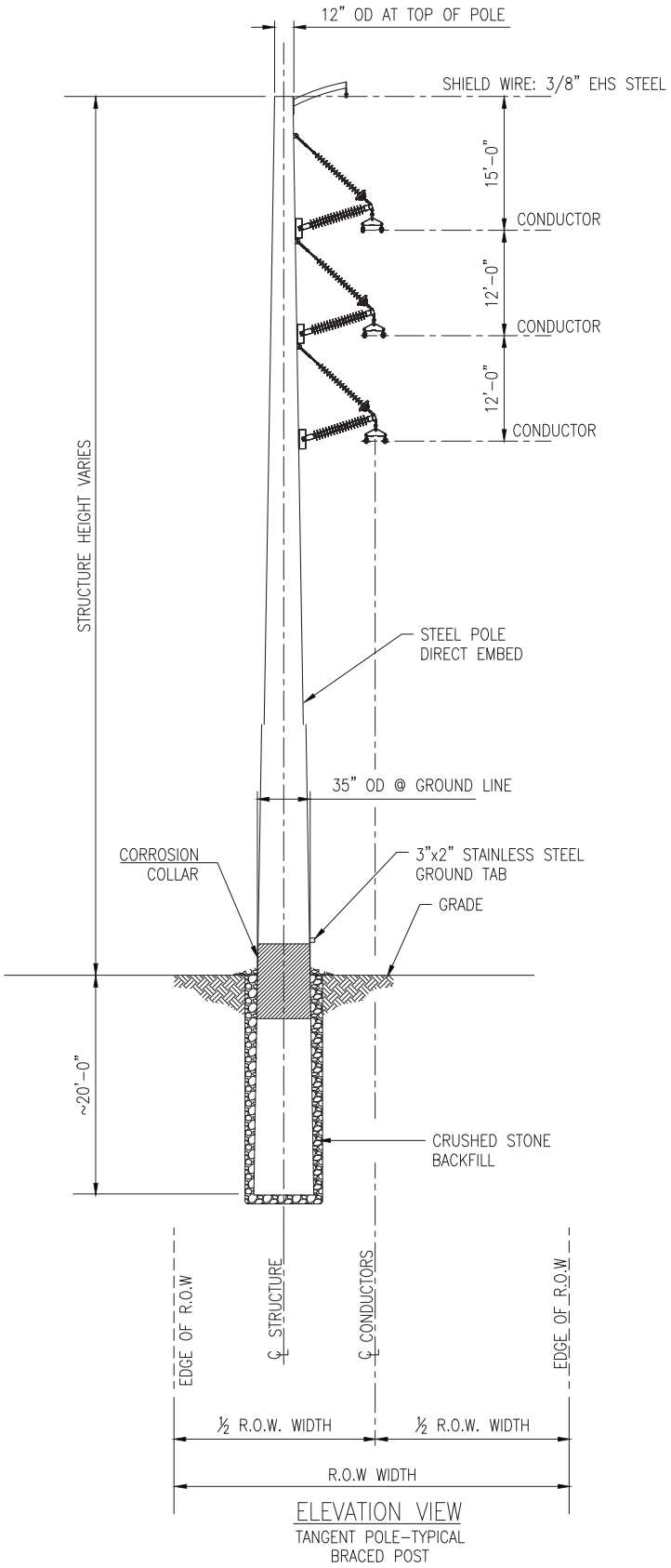
VISUAL RESOURCES - FIGURE 3

Mission Rock Energy Center - Aerial View

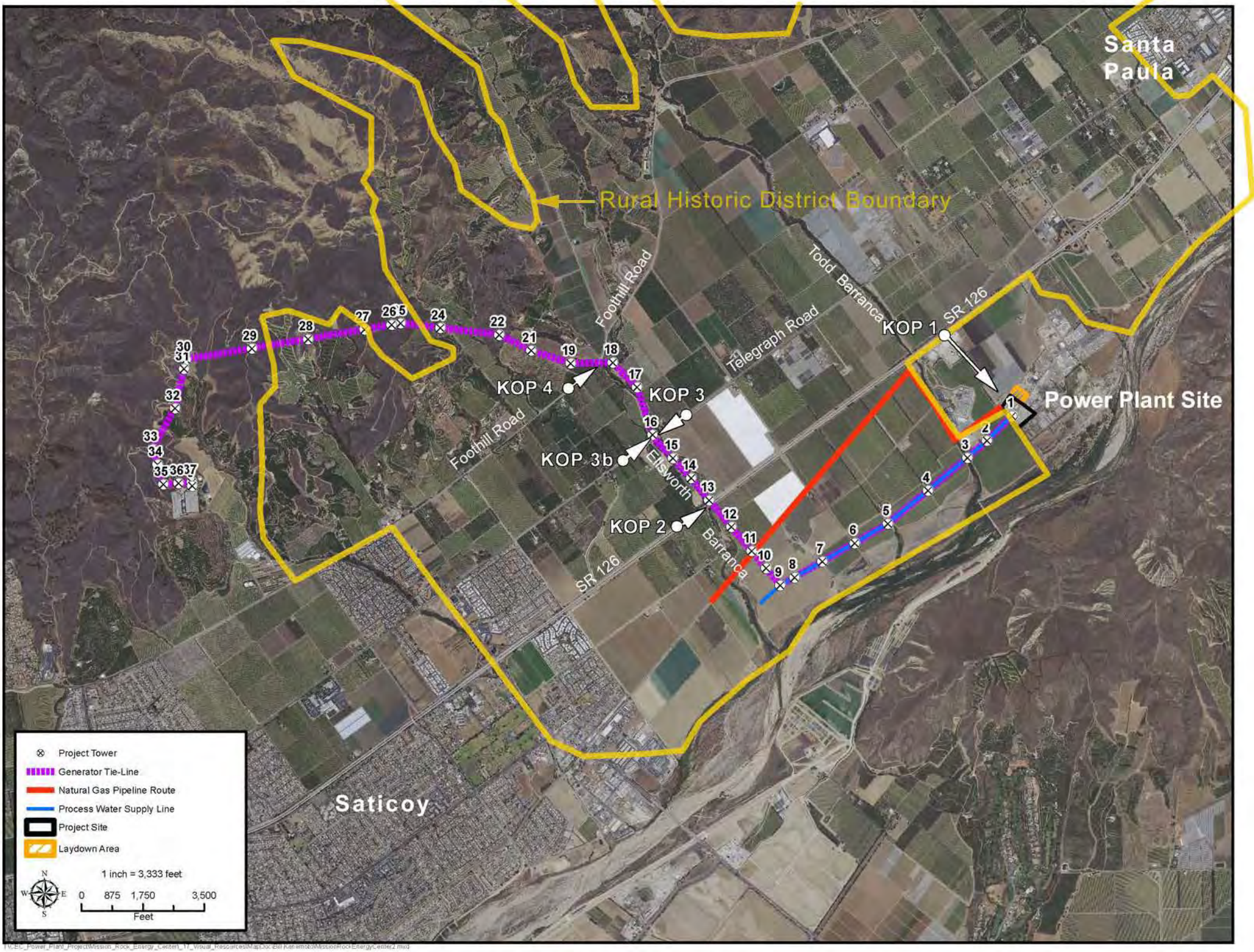
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 1.1-1

VISUAL RESOURCES - FIGURE 4
Mission Rock Energy Center - Monopole Elevation



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION
SOURCE: AFC Figure 3.2-1


Santa Paula
Rural Historic District Boundary
Foothill Road
Todd Barranca
Telegraph Road
SR 126
KOP 1
Power Plant Site
KOP 4
KOP 3
KOP 3b
KOP 2
Foothill Road
Ellsworth Barranca
SR 126
Saticoy
Project Tower
Generator Tie-Line
Natural Gas Pipeline Route
Process Water Supply Line
Project Site
Laydown Area
1 inch = 3,333 feet
0 875 1,750 3,500
Feet

VISUAL RESOURCES - FIGURE 6
Mission Rock Energy Center - Visual Setting Photos

View toward power plant site from Mission Rock Road, looking west from within industrial zone.

View toward power plant near KOP 1, SR 126, looking south. Portions of County jail, agricultural processing plant, other industrial uses visible in foreground, South Mountain in background.

Typical valley floor view, from Foothill Road, looking east, near tie-line alignment and KOP 4.

Eucalyptus windrow of Ellsworth Barranca, ridges of South and Sulphur Mountains visible in background, citrus orchards in foreground.

Citrus trees, though low, tend to block long views from much of the valley floor, as in this view.

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION
SOURCE: William Kanemoto and Associates

VISUAL RESOURCES - FIGURE 7a

Mission Rock Energy Center - KOP 1 - Existing View from State Route 126 toward the proposed project site

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-3a, CH2MHILL

VISUAL RESOURCES - FIGURE 7b

Mission Rock Energy Center - KOP 1 - Simulation of the view after completion of the project

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-3b, CH2MHILL

VISUAL RESOURCES - FIGURE 8a

Mission Rock Energy Center - KOP 2 - Existing View from State Route 126 looking northeast toward the alignment of the proposed transmission line

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-5a, CH2MHILL

VISUAL RESOURCES - FIGURE 8b

Mission Rock Energy Center - KOP 2 - Simulation of the view after completion of the proposed project

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-5b, CH2MHILL

VISUAL RESOURCES - FIGURE 9a

Mission Rock Energy Center - KOP 3 - Existing View from Telegraph Road looking southwest toward the alignment of the proposed transmission line

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-6a, CH2MHILL

VISUAL RESOURCES - FIGURE 9b

Mission Rock Energy Center - KOP 3 - Simulation of the view after completion of the proposed project

SOURCE: AFC Figure 5.13-6b, CH2MHILL

VISUAL RESOURCES - FIGURE 9c

Mission Rock Energy Center - KOP 3 - Photo of affected windrow

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Willam Kanemoto and Associates

VISUAL RESOURCES - FIGURE 10a

Mission Rock Energy Center - KOP 4 - Existing View from Foothill Road looking northeast toward the alignment of the proposed transmission line

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-7a, CH2MHILL

VISUAL RESOURCES - FIGURE 10b

Mission Rock Energy Center - KOP 4 - Simulation of the view after completion of the proposed project

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.13-7b, CH2MHILL

Engineering Assessment

FACILITY DESIGN

Shahab Khoshmashrab and Edward Brady

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the design, construction, and eventual closure of the Mission Rock project and its linear facilities would comply with applicable engineering laws, ordinances, regulations and standards (LORS). The proposed conditions of certification, below, would ensure compliance with these LORS.

INTRODUCTION

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the Mission Rock Energy Center (Mission Rock). The purpose of this analysis is to:

- Verify that the LORS that apply to the engineering design and construction of the project have been identified;
- Verify that the project's proposed design criteria and analysis methods have been described, 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 **Facility Design Appendix A** below. 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	2016 (or the latest edition in effect) California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	Ventura County Code of Ordinances: Division 3, Building Ordinance Division 8, Planning and Development Chapter 1, Zoning Chapter 1.1, Zoning (coastal) Chapter 7, Protection of Flood Control Facilities
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

The following **Facility Design** conditions of certification require the project to comply with the California Building Standards Code and Ventura County building and engineering 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 LORS applicable to the project; for a complete list of engineering LORS, please see **Facility Design Appendix A** below. These LORS are consistent with those that are applicable to power plants.

SETTING

The Mission Rock site is located in an industrial area that is zoned General Industrial (Ventura County). For more information on the site and its related project description, please see the **Project Description** section of this document.

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, ensure public health and safety, and verify that applicable engineering LORS have been identified. This analysis 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

The applicant proposes the use of accepted industry standards, design practices, and construction methods in preparing and developing the site. Staff concludes that this project would 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.

Mission Rock will be designed and constructed to the 2016 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 2016 CBSC takes effect, the 2016 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.

Note that analysis and proposed conditions of certification for all transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the **Transmission System Engineering** section of this document.

PROJECT QUALITY PROCEDURES

The applicant describes a quality program intended to ensure that the project's systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards ((CAL 2015a, AFC §§ 2.2.1, 2.2.2, 2.3.1; CAL 2015b, AFC Appendix 2A). 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, if approved, Mission Rock is actually designed, procured, fabricated, and installed as described in this analysis.

COMPLIANCE MONITORING

Under 2016 CBC, Division II, Section 104, 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 104 of the 2016 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 or a fee schedule agreed upon by the applicant and the CBO, pays the cost of these reviews and inspections.

Engineering and compliance staff will invite a third-party engineering consultant to act as CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure for protection of public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (Conditions of Certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction subject to CBO review and approval be approved by the CBO before it is performed. They also require that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written so that no element of construction (of permanent facilities subject to CBO review and approval) which could be difficult to reverse or correct can proceed without prior CBO approval. Elements of construction that are not difficult to reverse may proceed without approval of the plans. The applicant bears the responsibility to fully modify construction elements in order to comply with all design changes resulting from the CBO's subsequent plan review and approval process.

FACILITY CLOSURE

Facility closure is defined in the **Compliance Conditions and Compliance Monitoring Plan** section of this document as a facility shutdown with no intent to restart operation. In order to ensure that facility closure would be completed in a manner that is environmentally sound, safe, and protects the public health and safety, the project owner must submit a closure plan to the Energy Commission for review and approval prior to the commencement of closing the facility, as required in Condition of Certification **COM-15** (Facility Closure Planning) in **Compliance Conditions and Compliance Monitoring Plan**.

Though future conditions that could affect facility closure are largely unknown at this time, the requirements in **Compliance Conditions and Compliance Monitoring Plan** are adequate protection, even in the unlikely event that the project is abandoned.

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 comply with applicable engineering LORS.

3. The proposed conditions of certification will ensure that Puente 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. Staff will audit the CBO to ensure satisfactory performance.

4. Though future conditions that could affect facility closure are largely unknown at this time, it can reasonably be concluded that if the project owner submits a facility closure plan in accordance with **COM-15** as provided in the **Compliance Conditions and Compliance Monitoring Plan** portion of this document prior to facility closure, facility closure 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 2016 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 2016 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 (onsite), demolition, repair, or maintenance of the completed facility.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2016 CBSC is in effect, the 2016 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 (the Energy Commission) or the DCBO (if the Energy Commission delegates the CBO function to a DCBO firm or local agency) 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 2016 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 (the Energy Commission) in accordance with the agreement between the project owner and the CBO (the Energy Commission). If the Energy Commission delegates the CBO function to a DCBO firm or local agency, the project owner will make payments directly to the DCBO as directed in a contract (or other agreement) between the Energy Commission and the DCBO. The project owner shall send a copy of the DCBO'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.

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 sections 6704, 6730, 6731, and 6736 require state registration to practice as a civil engineer or 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 (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 2016 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 2016 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 2016 CBC.

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-built 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 2016 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 2016 CBC. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations, and other supporting documentation to the CBO for design review and acceptance for all project structures and equipment identified in the CBO-approved master drawing and master specifications list. 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 30 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 2016 CBC.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit a 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 2016 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 2016 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 Quality Assurance/Quality Control (QA/QC) procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations and industry standards, which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);
- NACE R.P. 0169-83;
- NACE R.P. 0187-87;
- NFPA 56;
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and

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.

A. Final plant design plans shall include:

1. one-line diagram for the 18 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 18 kV, 4.16 kV and 110/480 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:

D.

1. Receipt or delay of major electrical equipment;

2. Testing or energizing 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

CAL 2015a – Calpine Company (TN207151-1). Application for Certification, Mission Rock Energy Center, Vol I. December 30, 2015

CAL 2015b – Calpine Company (TN207160-1). Application for Certification Appendices, Mission Rock Energy Center, Vol II. December 30, 2015

FACILITY DESIGN APPENDIX A

ENGINEERING LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

This appendix lists the LORS that would be used in the engineering design and construction of the Mission Rock Energy Center (MREC).

1. Civil Engineering LORS:

California Building Code (CBC), 2016 Edition

American Association of State Highway and Transportation Officials (AASHTO)—Standards and Specifications

American Concrete Institute (ACI) − Standards and Recommended Practices

American Institute of Steel Construction (AISC) − Standards and Specifications

American National Standards Institute (ANSI) − Standards

American Society of Testing and Materials (ASTM) − Standards, Specifications, and Recommended Practices

American Water Works Association (AWWA) − Standards and Specifications

Asphalt Institute (AI) − Asphalt Handbook

State of California Department of Transportation (CALTRANS) Standard Specification

California Energy Commission (CEC) − Recommended Seismic Design Criteria for Non-Nuclear Generating Facilities in California, 1989

Concrete Reinforcing Steel Institute (CRSI) − Standards

2. Structural Engineering LORS:

California Building Code, 2016 Edition

American Concrete Institute (ACI)

American Institute of Steel Construction (AISC)

American Society of Civil Engineers (ASCE)

American Society of Mechanical Engineers (ASME)

American Welding Society (AWS)

Code of Federal Regulations, Title 29—Labor, Chapter XVII, Occupational Safety and Health Administration (OSHA)

National Association of Architectural Metal Manufacturers (NAAMM)—Metal Bar Grating Manual

Hoist Manufacturers Institute (HMI), Standard Specifications for Electric Wire Rope Hoists (HMI 100)

IEEE 980 – Guide for Containment and Control of Oil Spills in Substations

National Electric Safety Code (NESC), C2-2007

National Fire Protection Association (NFPA Standards)

OSHA Williams-Steiger Occupational Safety and Health Act of 1970

Steel Deck Institute (SDI)—Design Manual for Floor Decks and Roof Decks

3. Mechanical Engineering LORS:

California Building Standards Code, 2016 Edition

American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code

ASME/ANSI B31.1 Power Piping Code

ASME Performance Test Codes

ASME Standard TDP-1

American National Standards Institute (ANSI) B16.5, B16.34, and B133.8

American Gear Manufacturers Association (AGMA)

Air Moving and Conditioning Association (AMCA)

American Society for Testing and Materials (ASTM)

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)

American Welding Society (AWS)

Cooling Tower Institute (CTI)

Heat Exchange Institute (HEI)

Manufacturing Standardization Society (MSS) of the Valve and Fitting Industry

National Fire Protection Association (NFPA)

Hydraulic Institute Standards (HIS)

Tubular Exchanger Manufacturer's Association (TEMA)

4. Electrical Engineering LORS:

American National Standards Institute (ANSI)

American Society for Testing and Materials (ASTM)

Anti-Friction Bearing Manufacturers Association (AFBMA)

California Building Standards Code, 2016 Edition

California Electrical Code

Insulated Cable Engineers Association (ICEA)

Institute of Electrical and Electronics Engineers (IEEE)

Illuminating Engineering Society (IES)

National Electrical Manufacturers Association (NEMA)

National Electrical Safety Code (NESC)

National Fire Protection Association (NFPA)

Underwriters Laboratories, Inc. (UL)

5. Local LORS:

Ventura County Code of Ordinances:

Division 3, Building Ordinance

Division 8, Planning and Development

Chapter 1, Zoning

Chapter 1.1, Zoning (coastal)

Chapter 7, Protection of Flood Control Facilities

GEOLOGY AND PALEONTOLOGY

Garry Maurath, PhD, PG CHg

SUMMARY OF CONCLUSIONS

The proposed Mission Rock Energy Center (Mission Rock) site is located in an industrial area within unincorporated Ventura County, California, near Santa Paula, California along the southern side of the Santa Clara River Valley, just north of the Santa Clara River. The property lies approximately 0.5 mile southeast of the intersection of Todd Road and SR 126. The Mission Rock site and proposed gas and recycled water supply pipelines would run across relatively flat terrain. The proposed generator tie-line would be placed on towers and would extend into the southern slopes of the Sulphur Mountains to the northwest of Mission Rock.

The Mission Rock site area can be characterized as an active seismic area, with potentially large-magnitude earthquakes. The site could be subject to very strong levels of earthquake-related ground shaking and the effects of this shaking on structures must be mitigated. In addition to strong seismic shaking, the project may be subject to soil failure caused by liquefaction and/or dynamic compaction. A design-level geotechnical investigation is required for the project by the California Building Code 2016 (CBC 2016), and proposed Conditions of Certification **GEO-1**, and **Facility Design GEN-1**, **GEN-5** and **CIVIL-1**, would present standard engineering design requirements for mitigation of strong seismic shaking, liquefaction and potential excessive settlement due to dynamic compaction.

Petroleum is the only economic geologic resource in the project vicinity. The project site lies along the northwest boundary of the Saticoy oil field (DOGGR, 1990). There are no known oil wells located on the project site and the petroleum resource could be accessed by off-site drilling, and would not be impacted by Mission Rock.

Fossils have been found in close proximity to the project site. Potential impacts to paleontological resources due to construction activities are likely. However, if discovered during construction they would be mitigated through worker training and monitoring by qualified paleontologists, as required by proposed Conditions of Certification **PAL-1** through **PAL-8**.

Based on this information, Energy Commission staff (staff) concludes that the potential adverse cumulative impacts to project facilities from geologic hazards during its design life are less than significant. Similarly, staff concludes the potential adverse cumulative impacts to potential geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project, if any, are less than significant. It is staff's opinion that the proposed Mission Rock facility can be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards (LORS), and in a manner that both protects environmental quality and assures public safety.

INTRODUCTION

In this section, staff discusses the potential impacts of geologic hazards on the proposed Mission Rock facility as well as Mission Rock's potential impact on geologic, mineralogic, and paleontologic resources. Staff's purpose is to identify resources that could be significantly adversely affected, evaluate the potential of the project construction and operation to significantly impact the resources, and provide mitigation measures, as necessary, to ensure there would be no significant adverse impacts to geological and paleontological resources during 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 of the site is provided. The section concludes with staff's proposed conditions of certification that, if implemented, would reduce impacts from geologic hazards and project impacts to geologic, mineralogic, and paleontologic resources, to less than significant levels.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

The applicant must comply with the applicable laws, ordinances, regulations, and standards (LORS) listed in Geology and Paleontology Table 1 during Mission Rock's construction, operation, and demolition. Applicable LORS are listed in the Application for Certification (AFC) (CAL 2015a). The following table briefly describes the current LORS for both geologic hazards and resources and mineralogic and paleontologic resources. Federal LORS were reviewed, including the Earthquake Hazards Reduction Act of 1977, and the Paleontological Resources Preservation Act (PRPA) of 2009. Since the site is not located on federal land there are no federal regulations directly applicable to the geological or paleontological conditions at Mission Rock.

Geology and Paleontology Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description	Project Compliance
State		
California Building Code (2013)	The California Building Code (CBC 2013) 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 (CBC 2012	**GEO-1** requires the project's owner to submit a *Soils Engineering Report* to the CBO for design review. This report must include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils, and tsunami. In addition, the report must also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. Submittal and approval of this report would ensure compliance with this LORS.
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), §§2621–2630 (PRC 2016a)	This Act directed the California Geological Survey to identify known active faults in California and directs that mitigation for surface fault rupture of known active faults beneath occupied structures be implemented. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings	**GEO-1** requires the project's owner to submit a *Soils Engineering Report* to the CBO for design review. This report must include a thorough discussion of seismicity. Submittal and approval of this report would ensure compliance with this LORS.
Seismic Hazards Mapping Act, PRC §§2690–2699 (PRC 2016a)	Maps identify areas (zones) that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. Requires a geotechnical report be prepared that defines and delineates any seismic hazard prior to approval of a project located in a seismic hazard zone	**GEO-1** requires the project's owner to submit a *Soils Engineering Report* to the CBO for design review. This report must include a thorough discussion of seismicity and recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. Submittal and approval of this report would ensure compliance with this LORS.

Applicable Law	**Description**	**Project Compliance**
Professional Engineers Act (Business and Professions Code §§6700-6799); Geologist and Geophysicist Act (Business and Professions Code §§7800-7887)	Establishes the criteria for professional licensing of Engineers, Geologists and Geophysicists in California, and defines what constitutes professional work in the fields of engineering, geology and geophysics that require the signature and seal of a licensed professional.	**GEO-1** requires the project's owner to submit a Soils Engineering Report to the CBO for design review. A California licensed professional is required to sign and seal this report. **PAL-7** – portions of this report that involve an independent judgment or analysis of the earth's crust and the rocks and other materials which compose it must be done by or under the responsible charge of an appropriately licensed person.
Local		
Ventura County General Plan 2013	Ventura County addresses public safety and welfare in the county through implementation of its General Plan. General Plan policies specific to geologic, soil, and seismic hazards are listed in the Public Safety Element	**GEO-1** requires the project's owner to submit a *Soils Engineering Report* to the CBO for design review. This report must include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils, and tsunami. In addition, the report must also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. Submittal and approval of this report would ensure compliance with this LORS.

Applicable Law	Description	Project Compliance
Ventura County 2016 Building Code, Ordinance Number 4496	Acceptable design criteria for structures with respect to seismic design, load-bearing capacity, footings and foundations, and expansive soils.	**GEO-1** requires the project's owner to submit a *Soils Engineering Report* to the CBO for design review. This report must include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils, and tsunami. In addition, the report must also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. Submittal and approval of this report would ensure compliance with this LORS. A California licensed Professional Geologist or Certified Engineering Geologist is required to sign and stamp this report.
Standards		
Society for Vertebrate Paleontology (SVP, 2010)	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources developed by the SVP, a national organization of professional scientists. The measures were adopted in October 1995, and revised in 2010 following adoption of the Paleontological Resources Preservation Act (PRPA) of 2009. The SVP impact mitigation guidelines establish criteria for identifying and assessing significant paleontological resources. Additionally, these guidelines include standards and procedures to be employed prior to site disturbance, monitoring during disturbance, and preservation/mitigation of identified resources.	**PAL-1** through **PAL-8** were developed based upon the guidance provided by the SVP and Bureau of Land Management (BLM) standards to ensure that, if present, paleontological resources would be properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified. Compliance with these eight conditions would ensure compliance with this LORS.

Applicable Law	Description	Project Compliance
BLM Instructional Memorandum 2008-009	The Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands (IM 2008-009) provides an up-to-date classification system for paleontological resources, which is based on the potential for the occurrence of significant paleontological resources and the risk for impacts to the resource. Although primarily a classification guide IM 2008-009 also provides guidance on pre-construction and construction activities necessary to implement the classification, management, and protection of paleontological resources on lands managed by the BLM. While not required on non-BLM lands, the methodologies are useful for all paleontological studies, regardless of land ownership.	**PAL-1** through **PAL-8** were developed based upon the guidance provided by the BLM and SVP standards to ensure that, if present, paleontological resources would be properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified. Compliance with these eight conditions would ensure compliance with this LORS.

Building construction compliance with CBC standards is covered under engineering and construction permits for Mission Rock. There are no other permit requirements that specifically address geologic resources and hazards. However, excavation/grading and inspection permits may be required prior to construction and would be included in the overall project construction permit (see the **Land Use** section of this document).

No permits are required for compliance with geological LORS. However, the Energy Commission's Delegated Chief Building Officer is responsible for ensuring compliance with building standards.

SETTING

Mission Rock would be located near Santa Paula, California along the southern side of the Santa Clara River Valley, just north of the Santa Clara River (**GEOLOGY AND PALEONTOLOGY - FIGURE 1**). Topography near Mission Rock is relatively flat, with a gentle southwesterly grade. The current elevation of the site varies from approximately 180 to 185 feet above mean sea level. The proposed gas and water supply pipelines would run across relatively flat terrain. The proposed generator tie-line would be placed on monopole towers and would extend into the southern slopes of the Sulphur Mountains to the northwest of Mission Rock. Topography along the generator tie-in line is generally flat in the immediate vicinity of Mission Rock and mountainous along the northern portion with elevations ranging from 180 to more than 900 feet above mean sea level.

REGIONAL GEOLOGIC SETTING

Formation of the western coast of North America began in late Triassic time during inception of the Mid-Atlantic rise (DeCourten 2008). This motion caused the continental North American crustal plate to migrate westward. As the North American plate migrated westward, the eastern edge of the Farallon plate was overridden and subducted beneath the advancing North American plate (Atwater 1998). This crustal subduction continued into the Miocene (Yerkes 1965). As the Farallon plate disappeared into the subduction zone, the East Pacific Rise reached the western edge of the continent and the northern end of the Peninsular Ranges became deformed (Yerkes, 1965). The crust that comprises the Transverse Ranges is part of what is known as the Salinian Block, originally a piece of the North American Plate that was broken off what is now northwestern Mexico as the Gulf of California rifted open (Meigs and Oskin, 2002).

The Transverse Ranges are an east-west trending series of steep mountain ranges and valleys that have formed because of intense north-south compression. This compression, as well as the overall structural framework of the region, is generally considered the result of the right-lateral, strike-slip movement on the "Big Bend" segment of the San Andreas Fault. Mission Rock would be located within the Transverse Ranges geomorphic province of southern California in the Ventura Basin, one of several distinctive depositional basins along the western margin of Southern California. (**GEOLOGY AND PALEONTOLOGY - FIGURE 2**).
These basins hold sediments (mostly marine, but also terrestrial units) that record local transgressions and regressions of the Pacific Ocean. This is a process that has been

on-going for at least 40 million years, but the sediments of the Ventura Basin are quite young, dating from the Pliocene to Recent (the last 5 million years) (Yeats and Rockwell, 1991). Folded and faulted Pliocene to Quaternary sedimentary rocks mark the structure of the Santa Paula Quadrangle. Major faults in the region are west to southwest trending and include the Oak Ridge Fault and the Pitas Point-Ventura Fault (**GEOLOGY AND PALEONTOLOGY - FIGURE 3**)

The geological history of this region is complex, owing to intense tectonic deformation associated with the San Andreas Fault and rotation of the Transverse Ranges; this deformation continues to, present (Yeats and Rockwell, 1991). The Ventura Basin began as a deep-sea depositional basin as early as 4 to 5 million years ago, and its oldest sediments consist of relatively deep-sea marine turbidities and mudstones unconformably overlying Tertiary beds (Yeats and Rockwell, 1991). The Pico Formation is recognized as the start of the shallowing of this basin, as it represents the start of conditions where sedimentation rates were greater than subsidence rates in the offshore basin (Harden, 1998). The sediment in the valleys records a relative shallowing of sea level through time, through the combined effects of tectonic uplift and infilling of the basin by sediment, until the middle Pleistocene when there was a hiatus in deposition (termed the intra-Pleistocene unconformity in the Santa Clara Valley; Yeats and Rockwell, 1991). Deposition began again in the Pleistocene and continues to the present, in offshore portions of the basin and along the down-warped “seam” of the Oak Ridge Fault, which forms the southern margin of the Santa Clara Valley (Yeats and Rockwell, 1991).

The age of the Quaternary sediments in the Ventura Basin is well-constrained by vertebrate remains, microvertebrate remains (small mammal bones and teeth), magneto-stratigraphy, and radiometric dating of distinctive ash beds (Yeats and Rockwell, 1991). Calculated sedimentation rates within the basin are quite high; up to 7,300 meters (approximately 24,000 feet) of sediment have been deposited in the last 4 million years (Harden, 1998). The Santa Clara River Valley is the surface expression of a deep synclinal trough into which an enormous thickness of Plio-Pleistocene sediments was deposited contemporaneous with folding. The limbs of the Santa Clara Syncline are truncated and overturned by the San Cayetano Fault on the north and by the Oak Ridge Fault on the south. The great thicknesses of folded and faulted Cenozoic petroleum-rich sedimentary rocks make this region one of the important oil-producing areas of the U.S. (CGS, 2002).

A generalized north-south geologic cross-section through the Santa Clara River valley from the South Mountain oil field in the south to the Santa Paula oil fields in the north is presented in (**GEOLOGY AND PALEONTOLOGY – FIGURE 4**).

PROJECT SITE DESCRIPTION AND ACCESS

Mission Rock would be in an industrial area within unincorporated Ventura County, California, two miles west of the city of Santa Paula, at 1025 Mission Rock Road (**GEOLOGY AND PALEONTOLOGY - FIGURE 2**), Access to the site area from Santa Paula to the northeast or Ventura to the southwest is via SR 126, also called the Santa Paula Freeway. Adjacent land uses include the Granite Construction Company asphaltic concrete plant and asphalt recycling facility, automobile dismantling facilities, vehicle storage for crushed cars, auto repair and salvage yards, and agricultural production. Local site access is through the South Briggs Road exit from SR- 126 then to South Pinkerton Road, and Mission Rock Road. There is secondary emergency access west from Shell Road, which connects with Mission Rock Road at the gate location for the alternative site access to the project site. Currently the entire site is covered with asphalt or concrete pavement and is used for recreational vehicle and boat storage.

LOCAL GEOLOGIC SETTING

The Mission Rock site lies within a predominantly east-west trending extension of the Ventura Basin, filled with sediments that comprise the floor of the Santa Clara River Valley **(GEOLOGY AND PALEONTOLOGY – FIGURES 5A, 5B, and 5C)**. The southern edge of this valley is defined by the abrupt and steep hill-slopes of the Oak Ridge Fault (Tan et al. 2004), while to the north the valley's edge is defined by more weathered, rounded hills (Yeats and Rockwell1991). In between lays a low-gradient alluvial fan complex, or bajada, that slopes gently southward to the southern margin of the valley where the river lies. Numerous smaller rivers and seasonal streams have cut arroyos (locally termed "barrancas") into this fan as they flow south from the northern hills to the Santa Clara River (Gutierrez, et al. 2008). While the position of the Santa Clara River is constrained to the actual "crease" of the Oak Ridge Fault in the Mission Rock site area, the location of its mouth at the Pacific Ocean, 8.6 miles to the west-southwest, appears to have migrated through time (Yeats and Rockwell 1991).

The surficial geology in the immediate vicinity of the proposed Mission Rock facility is composed entirely of late Quaternary to Holocene alluvial deposits. Further east and south, Pliocene Marine and undivided pre-Cenozoic metasedimentary and metavolcanic rocks are present in the two-mile radius (**GEOLOGY AND PALEONTOLOGY – FIGURES 5** and **6**) that comprises South Mountain.

A Mission Rock site-specific preliminary geotechnical report has not yet been completed. A geotechnical investigation would be completed prior to commencement of detailed design activities. However, a geotechnical investigation was completed on the property forming the eastern boundary of Mission Rock (Earth Systems 2007).

As part of this investigation three small diameter exploratory borings were drilled and three test pits were dug (Earth Systems 2007). The borings were drilled to maximum depths of 51.5 feet below ground surface (bgs) and the deepest test pit was approximately 8.5 feet bgs. Groundwater was observed in exploratory borings at depths between 10 and 11 feet bgs. The upper four feet of the subsurface consists of artificial fill that is variable, consisting of sand to silty sand and concrete fragments (Earth Systems 2007). Beneath the artificial fill subsurface materials consist

predominantly of well graded sand and gravel deposits to a maximum depth of 51.5 feet bgs.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section assesses two types of impacts. The first is the potential impacts the proposed facility could have on existing geologic, mineralogic, and paleontologic resources in the area. The second is the potential geologic hazards which could adversely affect the proper functioning of the proposed facility and create life/safety concerns.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address when assessing impacts related to geologic and mineralogic resources, and effects of geologic hazards.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site, or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether the project would expose persons or structures to geologic hazards.
- Sections (XI) (a) and (b) concern the project's effects on mineral resources.

To assess potential impacts on unique geologic features and effects on mineral resources, staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if geologic and mineralogic resources exist in the area.

To assess potential impacts on paleontological resources, a paleontological resources records review was conducted using the online database maintained by the University of California (at Berkeley) Museum of Paleontology (UCMP 2017). This website provides generalized information for locality records of their collection. The applicant also conducted a reconnaissance-level paleontological resources field survey to confirm the distribution of fossiliferous units on the ground, and to refine the understanding of the paleontological productivity of those units. This survey, conducted on October 6, 2015, focused on those portions of the right-of-way where native sediment is exposed at, or present near, the surface. This included the foot-slopes and hills on the northern margin of the valley where the transmission line corridor is proposed. Reconnaissance-level survey of the remainder of the project right-of-way in the Santa Clara River Valley, including the Mission Rock generation station site, was also conducted. These latter areas are occupied by younger Quaternary alluvium, with only Holocene sediments of low paleontological sensitivity expected at or near the surface. The ground surface of the Santa Clara River Valley near Mission Rock is also largely obscured by residential, light industry, and agricultural development.

All research was conducted in accordance with accepted assessment protocol (BLM 2008 and SVP 2010) to determine whether known paleontologic resources exist in the

general area. If present or likely to be present, conditions of certification that outline required procedures to mitigate adverse effects to potential resources are proposed as part of the project's approval.

The current California Building Code (CBC 2013) provides geotechnical and geological investigation and design guidelines that engineers shall follow when designing a facility. Thus, the criterion used to assess the significance of a geologic hazard includes evaluating each hazard's potential impact on the design, construction, and operation of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others as may be dictated by site-specific conditions.

DIRECT/INDIRECT IMPACTS AND MITIGATION

An assessment of the potential impacts to geologic, mineralogic, and paleontologic resources, and from geologic hazards is provided below. The assessment of impacts is followed by a summary of potential impacts that may occur during construction and operation of the project and provides recommended conditions of certification that would ensure potential impacts are mitigated to a level that is less than significant. The recommended conditions of certification would allow the Energy Commission's compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme ensuring ongoing compliance with mitigation and LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

GEOLOGIC AND MINERALOGIC RESOURCES

At the proposed Mission Rock site, the geologic units at the surface and in the subsurface are widespread alluvial deposits that occur throughout the Ventura Basin area; these units are not unique in terms of commercial value. Although the potential is low, recreational or scientific (e.g. rare mineral or fossil) deposits may exist given the geologic environment in the area. Known commercial petroleum deposits and aggregate deposits are present in the Mission Rock area.

Per State of California Division of Oil and Gas, and Geothermal Resources, the proposed project site and surrounding area are situated within the Saticoy oil field (**GEOLOGY AND PALEONTOLOGY - FIGURE 7**). The Saticoy oil field is formed in structural traps that are separated from the West Mountain and South Mountain oil fields by the Oak Ridge Fault. The Saticoy oil field was discovered in 1955 and reached peak production in 1958. It is a small but productive field and currently has 15 wells in operation producing about 113 barrels per day and estimated reserves in 2009 of about 387,000 barrels. The producing formations are the Pleistocene Santa Barbara and the Upper Pliocene Pico Sand (DOGGR 2009).

There are numerous petroleum wells located near Mission Rock. Per online maps of the California Division of Oil, Gas and Geothermal Resources (2015), petroleum deposits are present in the immediately project area. Numerous active or abandoned wells are present and generally align with the Oak Ridge Fault trace that traverses the southern part of the basin and though the Mission Rock area **(GEOLOGY AND PALEONTOLOGY - FIGURE 8).**

In 1993, the California Division of Mines and Geology published a comprehensive mineral land classification for aggregate materials in the Southern Ventura County area. Based on this investigation, the Mission Rock area is mapped as Mineral Resource Zone 2. Mineral Resource Zone 2 is defined as areas where the "likelihood exists for significant aggregate deposits" (CDOC, 1993).

Existing surface development on and adjacent to Mission Rock, and the limited size of the project site would make development of the site as an aggregate source uneconomical. Thus Mission Rock would not result in a loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Additionally, Mission Rock would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local plan, specific plan, or other land use plan. Although Mission Rock contains oil and gas and aggregate mineral resources, construction of the project itself would not result in the removal of such resources and would not prevent the development of significant oil and gas or aggregate resources.

Based on the information above, it is staff's opinion that the project would have no effect on oil and gas production or on other geologic resources of commercial value or on the availability of such resources and would not have any significant adverse direct, or indirect, impacts to potential geologic and mineralogic resources.

PALEONTOLOGIC RESOURCES

The project site is mantled with artificial fill material. However, the actual thickness of this artificial fill material at the Mission Rock site would be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1.** Beneath the fill are native soils consisting of alluvial, estuarine and marine sediments. The upper 50 feet of the native soils consist of Holocene coastal marine sediments (CAL 2015a). Underlying the Holocene deposits are older Quaternary sediments of the Pleistocene age Santa Barbara and Pico Formations.

The proposed generator tie-line corridor crosses the hills to the north of the Santa Clara River Valley **(GEOLOGY AND PALEONTOLOGY – FIGURE 6)**. This component of the project would include construction of conductor support structures, with excavation of pads and footings, as well as stringing facilities. These hills crossed by the proposed generator tie-line corridor, are composed of poorly consolidated marine sediments of Pleistocene age (younger than 2.6 million years). The sediments represent near-shore as well as relatively shallow, off-shore environments.

The Pico Formation is the basal marine unit present in the region, although not within the paleontological area of potential effect of this project. The Pico Formation is a marine sedimentary unit, consisting predominantly of turbidites as well as near-shore sands and gravels. Two additional marine sedimentary units, the Santa Barbara and Las Posas Formations, stratigraphically overly the Pico Formation, and both of these are within the paleontological resources area of potential effect:. The Santa Barbara Formation consists of near-shore marine sediments once deposited at the margin of the Pacific Ocean. The lithology of the formation ranges from massive gray to bluish gray

claystone (Dibblee, 1992, terms this unit the Mudpit Claystone Member), to poorly consolidated, massive, light brown to brown silts and sandy silts. It occasionally includes fragments of older formations (Tan et al. 2004). In the generator tie-line corridor right-of-way, the clayey member appears missing and the marine sediments mapped as the Santa Barbara Formation are tan to brownish-gray silts and sandy silts. These sediments are fossiliferous, primarily producing shallow-marine and near-shore mollusks (Winterer and Durham, 1962). Many of the bivalves in these assemblages are paired (Winterer and Durham, 1962), indicating little if any transportation of these shells.

Because the entire project area is developed, no paleontological resources survey was conducted by the applicant. As noted previously, a reconnaissance-level field review conducted by the applicant confirmed that no native sediment is present at the surface, and that most of the project site is covered by concrete or blacktop.

Even though the site is developed and paved and mantled with artificial fill, excavations are proposed for project construction. If the excavations extend through the fill, native soils would be encountered. There is a low potential for significant fossils to be encountered in the excavations. However, there is potential for significant fossils to be encountered in the excavations for selected transmission line pole locations in the hills north of the site (poles 24 through 37), and particularly the pole locations situated in the Santa Barbara Formation near the western terminus of the transmission line (poles 28 through 32). Therefore, the possibility of encountering fossils remains. Therefore, Staff considers monitoring of construction activities in accordance with the proposed conditions of certification is necessary. Proposed Conditions of Certification **PAL-1** to **PAL-8** are designed to mitigate any potential paleontological resource impacts, as discussed above, to a less than significant level. Essentially, these conditions would require a worker education program in conjunction with monitoring of proposed earthwork activities by qualified professional paleontologists (paleontologic resource specialist; PRS) and recovery of any important paleontologic resources.

Earthwork would be halted in the immediate area of the find at any time potential fossils are recognized by either the paleontological monitor or the worker. A PRS would be retained for the proposed project by the applicant to produce a monitoring and mitigation plan, conduct the worker training, and provide on-site monitoring. During monitoring, the PRS can petition the CPM for a change in the monitoring protocol. Most commonly, this would be a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little chance of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

GEOLOGICAL HAZARDS

The AFC provides documentation of potential geologic hazards at the proposed Mission Rock plant site (CAL 2015a). Staff reviewed information presented in the AFC and conducted independent research regarding the site's susceptibility to geologic hazards. Staff believes that the possibility of geologic hazards affecting plant operations, during its practical design life of 40 years, would be low. However, the potential and probability for the site to be affected by geologic hazards such as strong seismic shaking,

liquefaction and dynamic compaction, would need to be addressed in a project geotechnical report per requirements of CBC 2013, or the most current version succeeding that code. All recommendations from the geotechnical report must be addressed in project design.

Staff's independent research included the review of available geologic maps, reports, and related data of the proposed Mission Rock facility. Geological information from the California Geological Survey (CGS) and other governmental organizations was reviewed. Staff's analysis of this information is provided below.

Faulting and Seismicity

In southern California, tectonic deformation between the Pacific and North American plates is accommodated primarily by a zone of northwest trending strike-slip faults. Most tectonic deformation in southern California occurs along strike slip faults associated with the on-land portion of the San Andreas Fault system (Schulz and Wallace 1992). In addition to the on-land faults, the tectonic shear is shared with faults in the offshore inner Continental Borderland region (Grant 2004). However, within this complex zone of shear, areas of compression also occur. Major active and potentially active faults in the region are shown on **GEOLOGY AND PALEONTOLOGY - FIGURE 3**.

Because of this active tectonic setting any specific area is subject to seismic hazards of varying degree, depending on the proximity and earthquake potential of nearby active faults, and the local geologic and topographic conditions. Seismic hazards include primary hazards from surface rupturing of rock and soil materials along active fault traces, and secondary hazards resulting from strong ground shaking, such as liquefaction and lateral spreading.

The Mission Rock site area can be characterized as an active seismic area, with potentially large-magnitude earthquakes. Early phases of active fault evaluation were conducted by CGS under the Alquist-Priolo Special Studies Zone Act of 1972 and under the subsequent Alquist-Priolo Earthquake Fault Zoning Act of 1994. These evaluations resulted in the delineation of Earthquake Fault Zones throughout California. Active faults with a potential to affect Mission Rock are listed and described below and their locations presented on **GEOLOGY AND PALEONTOLOGY - FIGURES 3** and **5)**:

Oak Ridge Fault

The Oak Ridge Fault is predominantly a south-dipping thrust fault that extends for more than 60 miles from the Santa Barbara Channel eastward. Locally, the fault trends along the north side of South Mountain and Oak Ridge to the western end of the Santa Susana Mountains. Between Saticoy and Santa Paula, the Oak Ridge Fault trends northeast, dips as steeply as 80 degrees to the southeast, and is characterized by left-lateral oblique slip in the subsurface. The surface trace of the Oak Ridge thrust is easily found on just about any map of the area as it forms a ridge (hence its name) to the south of its trace (South Mountain), and is roughly paralleled by both the Santa Clara River and SR-126, from the town of Piru to the coast, just southeast of Ventura.

The Oak Ridge thrust continues offshore, out to a point about 20 kilometers due south of Santa Barbara. The offshore segment is associated with a definite zone of active seismicity, though the only known Holocene surface rupture is found well onshore, between the towns of Bardsdale and Fillmore. At its eastern end, the Oak Ridge thrust becomes progressively more difficult to trace, and appears to be overthrust by the Santa Susana fault, thus becoming a blind thrust fault.

The fault associated with the 1994 Northridge earthquake is probably part of the Oak Ridge fault system, as it shares many of the characteristics of this fault. This blind thrust fault is known either as the Pico Thrust, named for the Pico Anticline (a geologic fold it is creating), or as the Northridge Thrust (SCEDC 2015). Per CGS, this fault exhibits late Quaternary fault displacement (within last 700,000 years) (CGS 2010a). An Alquist-Priolo (AP) Earthquake Fault Zone (EFZ) has not been established for the Oak Ridge Fault near the site (CGS 2007). The Oak Ridge Fault System probably contains many branching faults and is believed to be associated with one or more faults of similar trend present in the Santa Barbara Channel west of the Oxnard Plain (Ventura County 2013).

Venture-Pitas Point Fault

The Ventura-Pitas Point Fault is located approximately six miles to the west of Mission Rock. This fault lies within a mapped AP EFZ (CGS 2007). The EFZ does not extend to near the project site (CGS 2007). The mapped trace of the Ventura Fault extends along the base of the hills to the northwest of the project site, on the north side of the Santa Clara River from Santa Paula westerly to the mouth of the Ventura River, then westerly into the Santa Barbara Channel area. The fault is a north dipping, left-lateral reverse fault.

Evidence for the existence of the Ventura Fault is based mainly upon minor faulting of terrace deposits north of San Buenaventura and evidence of faulting from oil well drilling logs. The Ventura-Pitas Point fault system is an oblique left lateral reverse fault with a slip rate of 1.0 mm/yr, a maximum moment magnitude of 6.8 and a recurrence interval of 1,112 years (Ventura County 2013).

Wright Road Fault

Approximately three miles south of Mission Rock, beyond South Mountain, the north-northwest-trending Wright Road Fault separates the Oxnard Plain from the western ends of the South Mountain Anticline, Las Posas Valley, and Camarillo Anticline. It is postulated that the fault is a tear fault that forms the boundary between two blocks that are deforming at different rates. This fault is expressed at the surface by a youthful-appearing scarp in the alluvium of the Las Posas Valley and is included in the Official AP EFZ list prepared by CGS (2007).

Seismic Shaking

The proposed Mission Rock site area has experienced seismic activity with strong ground motion during past earthquakes, and it is likely that strong earthquakes causing seismic shaking will occur in the future. The significant geological hazard at Mission Rock is strong ground-shaking due to an earthquake. Peak horizontal ground acceleration (PGA), based on 10 percent probability of exceedance in 50 years, could

be 0.75 g from a magnitude 6.9 Mw design level earthquake, which could affect Mission Rock (Ventura County 2013).

Preliminary estimates of ground motion based on probabilistic seismic hazard analyses have been calculated for the project site using the USGS Earthquake Hazards application called the U.S. Seismic "DesignMaps" Web Application (**Geology and Paleontology Table 2**). This application produces seismic hazard curves, uniform hazard response spectra, and seismic design values. The values provided by this application are based upon data from the 2008 USGS National Seismic Hazard Mapping Project. These design parameters are for use with the 2012 International Building Code, the 2010 ASCE-7 Standard, the 2009 NEHRP Provisions, and their respective predecessors.

Geology and Paleontology Table 2
Planning Level 2013 CBC Seismic Design Parameters Maximum Considered Earthquake, ASCE 7 Standard

Parameter	Value
Assumed Site Class	D
Structure Risk Category	III - Substantial
SS – Mapped Spectral Acceleration, Short (0.2 Second) Period	2.899 g
S1 – Mapped Spectral Acceleration, Long (1.0 Second) Period	1.121 g
Fa – Site Coefficient, Short (0.2 Second) Period	1.0
Fv – Site Coefficient, Long (1.0 Second) Period	1.5
SDS – Design Spectral Response Acceleration, Short (0.2 Second) Period	1.933 g
SD1 – Design Spectral Response Acceleration, Long (1.0 Second) Period	1.121 g
SMS – Spectral Response Acceleration, Short (0.2 Second) Period	2.899 g
SM1 – Spectral Response Acceleration, Long (1.0 Second) Period	1.682 g

ASCE = American Society of Civil Engineers
Values from USGS 2010

These parameters are project-specific and based on Mission Rock's location, calculated using latitude and longitude inputs of 34.309004 degrees north and 119.107396 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 Mission Rock is "D", which is applicable to stiff soil. These parameters can be updated as appropriate following the results presented in a project-specific geotechnical investigation report performed for the site. The assumed "Structure Risk Category" is "III", which is based on its inherent risk to people and the need for the structure to function following a damaging event. Risk categories range from I (non-essential) to IV (critical). Examples of risk category I include agriculture facilities, minor storage facilities, etc., while examples of category IV include fire stations, hospitals, nuclear power facilities, etc.

The ground acceleration values presented are typical for the area. Other developments in the adjacent area would also be designed to accommodate strong seismic shaking. The potential for and mitigation of the effects of strong seismic shaking during an

earthquake must be addressed in a project-specific geotechnical report, per requirements of CBC 2013, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1** and **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 to insignificant levels in accordance with current standards of engineering practice.

Liquefaction

Liquefaction is the phenomenon in which uniformly sized, loosely deposited, saturated, granular soils with low clay contents undergo rapid loss of shear strength through the development of excess pore pressure during strong earthquake induced ground shaking of sufficient duration to cause the soil to behave as a fluid for a short period of time. Liquefaction generally occurs in saturated or near-saturated cohesionless soils at depths shallower than 75 feet below the ground surface, and is dependent on saturated thickness, grain size distribution, relative soil density, degree of saturation, and intensity and duration of the earthquake. The potential hazards associated with liquefaction are ground deformation (soil densification) and lateral spreading.

If the liquefying layer is near the surface, the effect for any structure supported on it is much like that of quicksand, resulting in sinking or tilting. If the layer is deeper in the subsurface, it can provide a sliding surface for materials above it, resulting in lateral motion (spreading or lurching) toward any nearby ‘free face’ (shore bluff, river embankment, excavation wall) (PBS&J 2009).

The proposed project site is mapped in a Liquefaction Investigation Zone on the State of California Seismic Hazard Zone Map for the Santa Paula Quadrangle (CGS 2002). A Liquefaction Investigation Zone is an area “where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacement such that mitigation as defined in Public Resources Codes Section 2693(c) [Seismic Hazards Mapping Act] would be required” (CGS 1998).

Soil conditions at the Mission Rock site predominantly consist of quaternary alluvial deposits that could include liquefiable materials. Depth to water beneath a property adjacent to the eastern boundary of the site has been measured to be relatively shallow (10 feet below ground surface) (Earth Systems 2007). Although depth to groundwater is shallow at Mission Rock, based on analysis of the Standard Penetration Test blow counts, very course grain size of subsurface materials, and generally discontinuous nature of the underlying soil layers encountered in three geotechnical borings north of Mission Rock(Earth Systems 2007), the site may have a low susceptibility to significant seismically induced liquefaction.

Groundwater levels must be confirmed and the liquefaction potential on the proposed Mission Rock site must be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1**, and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5,** and **CIVIL-1**.

Ground Rupture and Lateral Spreading

Ground rupture is caused when an earthquake event along a fault creates rupture at the surface. The Oak Ridge Fault is mapped approximately one-third of a mile south of Mission Rock. Per Fisher (2004), the segment of the Oak Ridge fault through the Santa Clara River Valley should be considered for further evaluation by the CGS as it is a potential regional earthquake threat. Data suggest that more recent late Pleistocene or early Holocene activity may have occurred (Fisher 2004). The likelihood of a ground rupture at Mission Rock to occur is considered low to moderate; however, further fault-induced ground rupture evaluation and analysis should be conducted as part of the project's forthcoming geotechnical investigation.

Lateral spreading of the ground surface during an earthquake usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spreading generally takes place in the direction of a free-face (i.e., retaining wall, slope, or channel). For sites located in proximity to a free-face, the amount of lateral ground displacement is strongly correlated with the distance of the site from the free-face. Other factors such as earthquake magnitude, distance from the earthquake epicenter, thickness of the liquefiable layers, and the fines content and particle sizes of the liquefiable layers also affect the amount of lateral ground displacement.

Based on analysis of the Standard Penetration Test blow counts and generally discontinuous nature of the underlying soil layers encountered in three geotechnical borings constructed north of Mission Rock (Earth Systems 2007), the site may not be considered susceptible to significant seismically induced lateral spread. However, the susceptibility of the underlying beds to lateral spread beneath the proposed project site must be addressed in a project-specific geotechnical report, per requirements of CBC 2013, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1** and **Facility Design** Conditions of Certification **GEN-1, GEN-5** and **CIVIL-1**.

Subsidence

Subsidence is any settling or sinking of the ground surface over a regional area arising from surface or subsurface causes, such as earthquakes or groundwater and/or oil extraction. A very significant area in Ventura County, the Oxnard Plain (located south-southwest of Mission Rock and hydraulically connected to the Santa Clara River valley), is experiencing subsidence. Data suggest that groundwater has been extracted from the aquifers underlying the Oxnard Plain at a rate that exceeds the rate of replenishment; causing a condition referred to as "overdraft." Overdraft of water for agricultural, domestic, and industrial uses has caused a significant drop in the water table in the Oxnard Plain. The Ventura General Plan (Hazards Appendix) indicates that Mission Rock is within an area prone to subsidence (Ventura County 2013).

Although the aquifer of the Santa Clara River valley is hydraulically connected to the Oxnard Plain area, field data and results of numerical modeling data indicate that land subsidence occurs primarily in the Oxnard Plain area (Hanson and others 2003). This is expected for two reasons. First, although the Santa Clara River Valley in the vicinity of the proposed Mission Rock site is a narrow aquifer bound to the north and south by uplifted fault blocks, the Santa Clara River flows along the southern boundary of the

aquifer. The Santa Clara River is hydraulically connected to the generally coarse grained aquifer beneath the site generating significant recharge to the aquifer, which creates a constant head hydraulic boundary along the southern edge of the aquifer. This condition would mitigate any potential effects of pumping and subsequent subsidence on the project area. Secondly, based on the length of time the lands surrounding Mission Rock have been used for sustained agricultural production, the maturity of the agricultural development, and the location of the project site with respect to the Santa Clara River, there is a very low probability that construction of Mission Rock would have any impact on the occurrence or progression of groundwater subsidence resulting from groundwater extraction.

Hydrocompaction

Hydrocompaction 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.

Based on a geotechnical investigation of an adjacent property (Earth Systems 2007) it is unlikely that the site soils would be susceptible to hydrocompaction. However, the potential for and mitigation of the effects of hydrocompaction of site soils must be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Conditions of Certification **GEO-1**, and **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.

Compressible Soils

Compressible soils are generally those soils that undergo consolidation when exposed to new loading, such as fill placement or building construction. Buildings, structures and other improvements may be subject to excessive settlement-related distress when built above compressible soils. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils.

Based on the results of a geotechnical evaluation at a property adjacent to Mission Rock (Earth Systems 2007) there is a very low potential for compressible soils at the project site. However, the potential for and mitigation of the effects of consolidation of site soils must be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1**, and **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.

Expansive Soils

Soil expansion occurs when clay-rich soils, with an affinity for water, have in-place 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 Ventura County General Plan states that some parts of the county exhibit expansive soils, but it is not pervasive or widespread throughout the county (Ventura County 2013). The potential for expansive soils at Mission Rock would be considered low. However, the potential for and mitigation of the effects of expansive soils must be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1**, and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. Expansive soils, if present, can be readily mitigated by either soil amendments or by removal and replacement with non-expansive soils.

Corrosive Soils

Corrosive soils are typically considered as having chloride levels greater than 500 ppm, sulfate levels greater than 2,000 ppm, pH less than 5.5, or an electrical resistivity of less than 1,000 ohm-centimeters. Corrosive soil conditions may exacerbate the corrosion hazard to buried conduits, foundations, and other buried concrete or metal improvements. Corrosive soil could cause premature deterioration of underground structures or foundations. Constructing project improvements on corrosive soils could have a significant impact to the project.

The project site is in a geologic environment that has a low potential to contain soils that are corrosive to concrete and metals. Analytical results for a soil sample collected at a depth of four feet below existing grade in a test pit dug along the eastern boundary of Mission Rock were: chloride 34 ppm, sulfate 150 ppm, pH 5.9, and resistivity 3410 ohm-centimeters. Based on these results corrosive soil conditions are not likely to occur at Mission Rock. However, the potential for and mitigation of the effects of corrosive site soils must be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1**, and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**.

Mitigation of corrosive soil conditions may involve the use of concrete resistant to sulfate exposure. Corrosion protection for metals may be needed for underground foundations or structures in areas where corrosive groundwater or soil could potentially cause deterioration. Typical mitigation techniques include epoxy and metallic protective coatings, the use of alternative (corrosion resistant) materials, and selection of the appropriate type of cement and water/cement ratio.

Mass Wasting

Mass wasting depends on steepness of the slope, underlying geology, surface soil strength, and moisture in the soil. Frequently, mass wasting accompanies other natural

hazards. Although landslides sometimes occur during seismic events, earthquakes are rarely their primary cause. One very common type of mass wasting, landslides, is typically caused by an increase in the down slope gravitational stress applied to slope materials (over steepening).

Undercutting of a valley wall by stream erosion is a common way that slopes could be naturally over steepened, contributing to the likelihood of mass wasting. Other ways include excessive rainfall or irrigation on a cliff or slope. Mass wasting is also influenced by human activity (mining and construction of buildings, railroads, and highways) and natural factors (geology, precipitation, and topography).

Significant excavating, grading, or fill work during construction might introduce mass wasting hazards at the project site. Because the Mission Rock site would be relatively flat, and located substantial distances from steep terrain, and no significant excavation is planned, the potential for direct impact from mass wasting at the site is considered low to negligible.

However, Quaternary landslide deposits have been mapped along the western portion of the transmission line, particularly in the vicinity of pole locations 26, 27, 29, 32, 33, and 34. The potential for and mitigation of the effects of existing landslide deposits and material potentially susceptible to mass movement must be addressed in a project-specific geotechnical report, per requirements of CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1**, and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**.

Tsunamis and Seiches

Tsunamis are large-scale seismic-sea waves caused by offshore earthquakes, submarine landslides and/or volcanic activity. Tsunamis may be manifested in the form of wave bores or a gradual upwelling of sea level and can be caused by offshore landslides or earthquakes. Because Mission Rock would be located roughly 180 feet above mean sea level and more than nine miles from the Pacific Ocean, the potential for a significant tsunami event that would affect the site is negligible.

Seiches are defined as oscillations in confined or semi-confined bodies of water due to earthquake shaking. Because there are no large bodies of water near the project site, there is no potential for a seiche to impact Mission Rock.

Effects of Sea Level Rise

Mission Rock would be located more than nine miles inland from the Pacific Ocean and is not subject to the effects of sea-level rise.

OPERATION IMPACTS AND MITIGATION

Operation of the proposed plant facilities would not have any adverse impact on geologic, mineralogic, or paleontologic resources. Once the plant is constructed and operating, there would be no further disturbances that could affect these resources.

Potential geologic hazards, including strong ground shaking, ground subsidence, liquefaction, settlement due to compressible soils, hydrocompaction, or dynamic compaction, corrosive soils, and the possible presence of expansive clay soils, can be effectively mitigated through facility design such that these potential hazards would not affect future operation of the facility. Compliance with Condition of Certification **GEO-1**, and Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1** in the **Facility Design** section would ensure Mission Rock 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

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the Mission Rock p[project (PRC § 21083; CCR, Title 14, § 15064[h], 15065[c], 15130, and 15355).

Mission Rock would not cause adverse impacts on geological resources and would not cause an exposure of people or property to geological hazards. Additionally, there are no minor impacts that could combine cumulatively with those of other projects. Thus, Mission Rock would not result in a cumulatively considerable impact.

No surface or near surface geologic and mineralogic resources have been identified in the project area. The site overlies the Saticoy oil field, which was discovered in 1955, production peaked in 1958, and the field is currently producing less than 115 barrels per day. The field has been drilled out, but additional supplemental recovery wells could be constructed on adjacent properties using directional drilling techniques should access to reserves directly beneath the site be necessary. Development of this project is not expected to lead to a significantly cumulative effect on geologic and mineralogic resources within the project area.

Paleontological resources have been documented in the general area of the proposed project but not in sediments that could be encountered beneath the site. If significant paleontological resources are uncovered during construction, they would be protected and preserved in accordance with Conditions of Certification **PAL-1** to **PAL-8**. These conditions would also mitigate any potential cumulative impacts.

The proposed Mission Rock site would be situated in an active geologic environment. Strong ground shaking potential must be mitigated through foundation and structural design as required by CBC 2013, or the most current version succeeding that code. The potential for lateral spreading and liquefaction must be addressed and mitigated through appropriate facility design. Compressible soils and soils that may be subject to settlement due to liquefaction and dynamic compaction, must be addressed and mitigated in accordance with a design-level geotechnical investigation as required by CBC 2013, or the most current successor to that code, and proposed Conditions of Certification **GEO-1**, and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1.**

FACILITY CLOSURE

Future facility closure activities would not be expected to impact geologic or mineralogic resources since no such resources are known to exist at either the location of Mission Rock or along its proposed linears. In addition, the decommissioning and closure of the proposed project would not negatively affect geologic, mineralogic, or paleontologic resources since most of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of Mission Rock.

CONCLUSIONS

Because of its geologic setting, the site could be subject to very strong levels of earthquake-related ground shaking. The significant effects of strong ground shaking on Mission Rock structures must be mitigated through structural designs required by the most recent edition of the California Building Code (currently CBC 2016). CBC 2016 requires that structures be designed to resist seismic stresses from anticipated maximum ground acceleration.

In addition to strong seismic shaking, the project may be subject to soil failure caused by liquefaction and/or dynamic compaction. A design-level geotechnical investigation required for the project by CBC 2016, or the most current version succeeding that code, and proposed Conditions of Certification **GEO-1** and, and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**, would present standard engineering design requirements for mitigation of strong seismic shaking, liquefaction and potential excessive settlement due to dynamic compaction.

Petroleum is the only economic geologic resource in the project vicinity. Other than petroleum, there are no known viable mineralogical or geologic resources at the proposed Mission Rock site.

The near surface of the project site is highly disturbed and partially covered by artificial fill, blacktop and onsite structures. Native soils beneath the fill have a potential to contain fossils. The underlying Santa Barbara and Saugus formations have yielded numerous significant fossils as reported by the applicant's paleontologist during the paleontological archive and literature reviews.

While significant paleontological resources are not anticipated to be discovered during construction of the proposed project, 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-8**.

Based on this information, Energy Commission Staff concludes that the potential adverse cumulative impacts to project facilities from geologic hazards during its design life are less than significant. Similarly, Staff concludes the potential adverse cumulative impacts to potential geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project, if any, are less than significant. It is staff's opinion that the proposed Mission Rock facility could 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

PROPOSED CONDITIONS OF CERTIFICATION

General conditions of certification with respect to geologic hazards are proposed under Conditions of Certification **GEN-1, GEN-5**, and **CIVIL-1** in the **Facility Design** section and in **GEO-1** of this section. Proposed paleontological conditions of certification follow in **PAL-1** through **PAL-8**. It is staff's opinion that the likelihood of encountering paleontologic resources could be high in areas where native Pleistocene age deposits occur. Staff would consider reducing monitoring intensity, at the recommendation of the project PRS, following examination of sufficient, representative excavations that fully describe site stratigraphy.

GEO-1 A Soils Engineering Report, as required by Section 1803 of the California Building Code (CBC) (2016), or its successor in effect at the time construction of the project commences, shall specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils; and ground rupture due to faulting. In accordance with the CBC, the report must also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. In accordance with the California Business and Professions Code, the appropriate qualified California licensed individual(s) are required to sign and seal the Soils Engineering Report.

Verification: The project owner shall include in the application for a grading permit a copy of the Soils Engineering Report which addresses the potential for strong seismic shaking; liquefaction; dynamic compaction; settlement due to compressible soils; corrosive soils: and ground rupture due to faulting, and a summary of how the results of the analyses were incorporated into the project's foundation and grading plan design for review and comment by the delegate chief building official (CBO). The report will address slope stability issues associated with transmission line pole locations 21 through 37. The report will also address transmission line foundation design, to include protection against erosion and scour from flash flooding for the transmission line pole location 3 near Todd Barranca and pole locations 13 through 18 near Ellsworth Barranca). A copy of the Soils Engineering Report, application for grading permit and any comments by the CBO are to be provided to the CPM at least 60 days prior to grading.

PAL-1 The project's owner shall provide the CPM with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the paleontological resources report (PRR), the project's owner shall obtain CPM approval of the replacement PRS. The project's owner shall keep resumes on file for qualified paleontological resources monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM for review and approval.

The PRS's 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 Qualified Professional Paleontologist as defined in the Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources by the Society of Vertebrate Paleontology (SVP 2010). The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree (M.S, Ph.D., or equivalent).

2. Ability to recognize and collect fossils in the field.

3. Local geological and biostratigraphic expertise.

4. Proficiency in identifying vertebrate and invertebrate fossils.

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's 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 a minimum of one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and a minimum of four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification:

1. At least 60 days prior to the start of ground disturbance, the project's owner shall submit a resume and statement of availability of its designated PRS for on-site work to the CPM, whose approval must be obtained prior to initiation of ground disturbing activities.

2. At least 30 days prior to ground disturbance, the PRS or project's owner shall provide a letter with resumes naming anticipated PRM's for the project. The letter shall state that the identified PRM's meet the minimum qualifications for paleontological resource monitoring as required by this condition of certification. If additional PRM's are needed during the project, the PRS shall provide additional

letters and resumes to the CPM. The letter shall be provided to the CPM for approval no later than one week prior to the monitor's beginning on-site duties.

3. Prior to any change of the PRS, the project's owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project's 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's owner shall provide copies to the PRS and CPM. The site grading plan and the plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings must show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities change, the project's 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's owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project's owner shall ensure that the PRS or PRM consults weekly with the project's superintendent and construction field manager to confirm area(s) to be worked the following week, until ground disturbance is completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project's owner shall provide the maps and drawings to the PRS and CPM.

2. If there are planned changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

3. If there are changes to the scheduling of the construction phases, the project's owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project's owner shall ensure that the PRS prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and submits the PRMMP to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, sampling, and reporting activities, and may be modified with CPM approval. The PRMMP shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall include all updates and reside with the PRS, each PRM, the project's owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP. 2010) and shall include, but not be limited to, the following:

1. Procedures for and 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 required by the PRMMP and these conditions of certification.

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units.

4. An explanation of why sampling is needed, a description of the sampling methodology, and how much sampling is expected to take place in which geologic units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units.

5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling at these locations.

6. A discussion of procedures to be followed: (a)in the event of a significant fossil discovery, (b) stopping construction, (c) resuming construction, and (d) how notifications will be performed.

7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits.

8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum that 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.

10. A copy of the paleontological resources conditions of certification.

Verification: At least 30 days prior to ground disturbance, the project's owner shall provide a copy of the PRMMP to the CPM. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project's owner evidenced by a signature.

PAL-4 Prior to ground disturbance the project's owner and the PRS shall prepare a CPM-approved Worker Environmental Awareness Program (WEAP).

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources. The purpose of the WEAP is to train project workers to recognize paleontologic resources and identify procedures they must follow to ensure there are no impacts to sensitive paleontologic resources. The WEAP shall include:

1. A discussion of applicable laws and penalties under the law.

2. Good quality photographs or physical examples of fossils expected to be found in units of high paleontologic sensitivity at, or near, the site.

3. Information that the PRS or PRM has the authority to stop or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource.

4. Instruction that employees are to stop or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM.

5. An informational brochure that identifies reporting procedures in the event of a discovery.

6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training.

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

The project's owner shall submit the training script and, if the project's owner is planning to use a video for training, a copy of the training video, with the set of reporting procedures for workers to follow that will be used to present the WEAP and qualify workers to conduct ground disturbing activities that could impact paleontologic resources.

Verification:

1. At least 30 days prior to ground disturbance, the project's owner shall submit to the CPM for review and comment the draft WEAP, including the brochure and sticker. The submittal shall also include a draft training script and the set of reporting procedures for workers to follow.

2. At least 15 days prior to ground disturbance, the project's owner shall submit to the CPM for approval the final WEAP and training script. If the project's owner is planning to use a video for training, a copy of the training video will be submitted following final approval of WEAP and training script.

PAL-5 No worker shall excavate or perform any ground disturbance activity prior to receiving CPM-approved WEAP training by the PRS, unless specifically approved by the CPM.

Prior to project ground disturbance the following workers shall be WEAP trained by the PRS in-person: project managers, construction supervisors, foremen, and all general workers involved with or operate ground-disturbing equipment or tools. Following the start of ground disturbing activities and after the initial WEAP training conducted prior to ground disturbance, a CPM-approved video or in-person training may be used for new employees. If a video is used a qualified trainer shall be present to monitor training and respond to questions. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. A WEAP certification of completion form shall be used to document who has received the required training.

Verification:

1. In the Monthly Compliance Report (MCR), the project's owner shall provide copies of the WEAP certification of completion forms with the names of those trained, trainer identification, and type of training (in-person and/or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

2. If the project's owner requests an alternate paleontological WEAP trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct WEAP training prior to CPM authorization.

PAL-6 The project's owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading and excavation 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's owner shall notify and seek the concurrence of the CPM. The PRS may not further delegate the responsibility for determining whether full-time monitoring is necessary.

The project's owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project's 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's owner to the CPM prior to the change in monitoring and be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.
2. The project's owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities; copies of these logs shall be submitted with the monthly compliance report. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.
3. The project's 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's owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event, when construction has been stopped because of a paleontological find.
5. For excavations planned in material that is classified as having a moderate to high paleontological sensitivity prior to construction additional precautions may be required. Should excavation methods be proposed that would preclude effective monitoring and examination of paleontological resources encountered during excavation, appropriate mitigation involving education of the public about the lost resources will be proposed in the PRMMP.

The project's owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities that will be included in each MCR. The summary will include the name(s) of PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils**.** Negative findings, when no fossils are identified, shall also be reported. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification:

1. A copy of the daily monitoring log of paleontological resource activities shall be included in the monthly compliance report (MCR).

2. The project's owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 15 days in advance of any proposed changes in monitoring different from that identified in the PRMMP, which will require concurrence between the PRS and CPM. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-7 The project's owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and shall be submitted to the CPM for approval.

The report shall include, but not be limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; and the PRS' description of sensitivity and significance of those resources; and indicate if and how fossil material was curated in accordance with **PAL-3**.

Any portions of this report that involve any independent judgment or analysis of the earth's crust, and the rocks and other materials which compose it, must be done by or under the responsible charge of an appropriately California licensed person.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project's owner shall submit the PRR under confidential cover to the CPM.

PAL-8 The project's owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed, including collection of fossil material, preparation of fossil material for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological resource materials encountered and collected during project construction. The project's owner shall pay all curation fees charged by the museum for fossil material collected and curated as a result of paleontological mitigation. The project's owner shall also provide the curator with documentation showing the project's owner irrevocably and unconditionally donates, gives, and assigns permanent, absolute, and unconditional ownership of the fossil material.

Verification: Within 60 days after the submittal of the PRR, the project's owner shall submit documentation to the CPM identifying the entity that will be responsible for curating collected specimens. This documentation will also show that fees have been paid for curation and the owner relinquishes control and ownership of all fossil material.

Certification of Completion
Worker Environmental Awareness Program
MISSION ROCK ENERGY CENTER (15-AFC-02)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
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25.			

Cultural Trainer: _____ Signature: _____ Date: ___/___/____

Paleo Trainer: _____ Signature: _____ Date: ___/___/____

Biological Trainer: _____ Signature: _____ Date: ___/___/____

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GEOLOGY AND PALEONTOLOGY - FIGURE 1

Mission Rock Energy Center Project - Regional Vicinity Map

GEOLOGY AND PALEONTOLOGY

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery

GEOLOGY AND PALEONTOLOGY - FIGURE 2

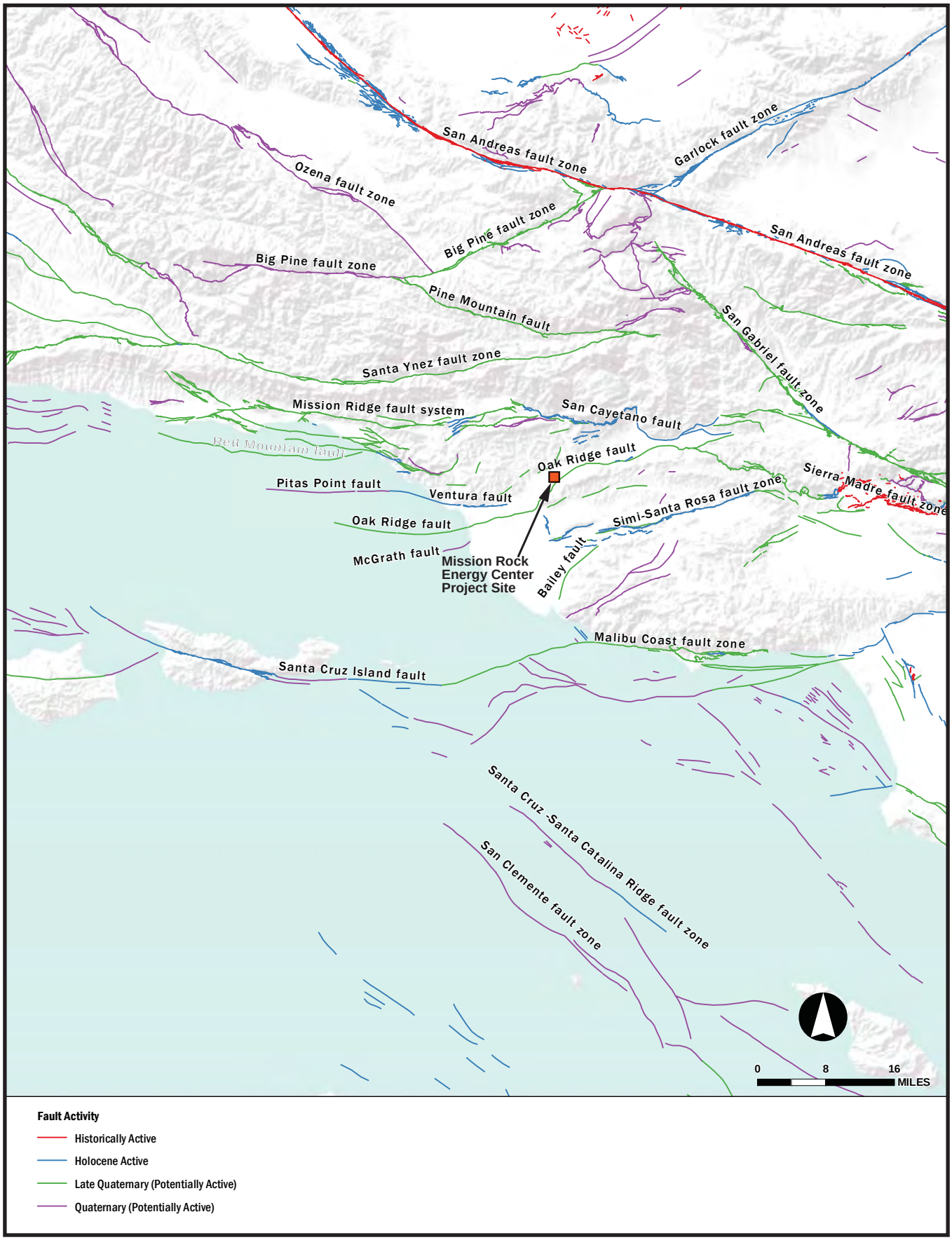
Mission Rock Energy Center Project - Geomorphic Provinces

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Department of Conservation, California Geological Survey, 2002.

GEOLOGY AND PALEONTOLOGY - FIGURE 3

Mission Rock Energy Center Project - Regional Faults

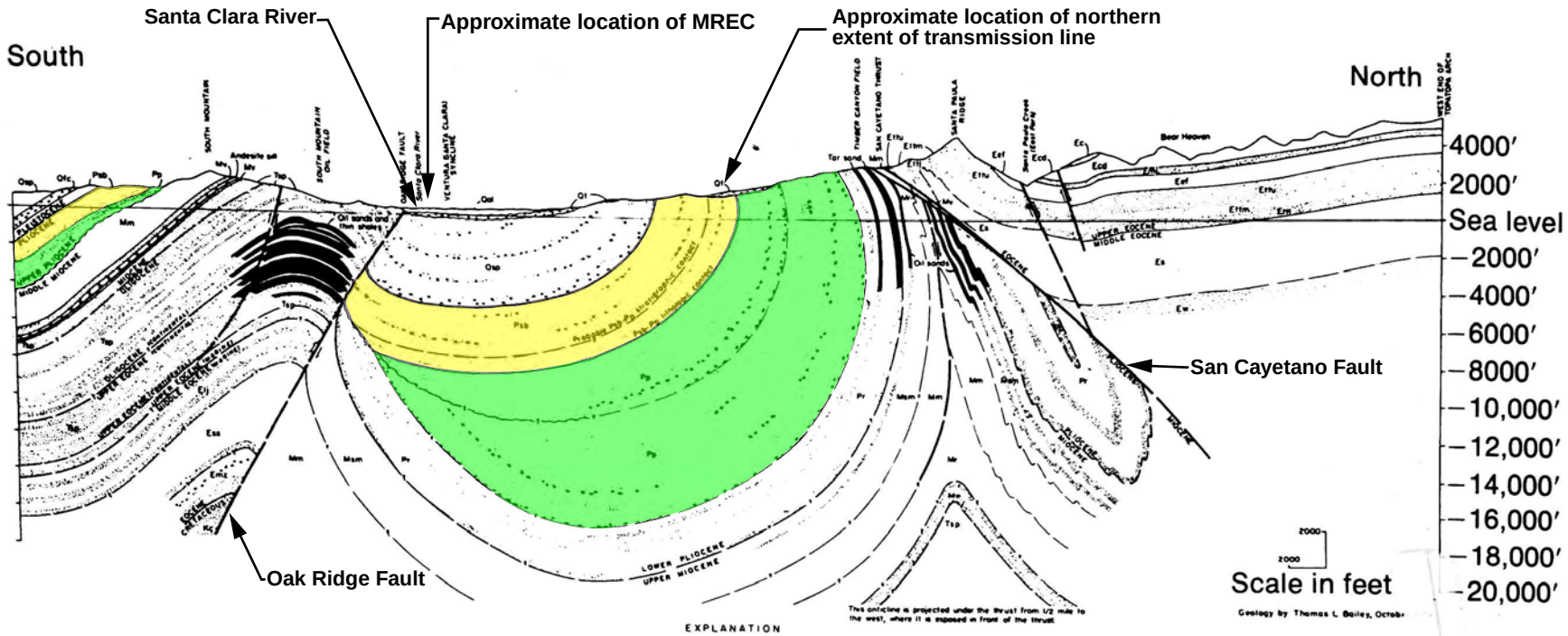


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: NRG 2015a

GEOLOGY AND PALEONTOLOGY - FIGURE 4

Mission Rock Energy Center Project - Generalized North-South Geologic Cross-Section Through Santa Clara River Valley



Qal = alluvium
Qt = terrace gravels
Qsp = San Pedro formation (clay, sand, gravel)
Qfc = Fox Canyon formation (sandstone, conglomerate)
Psb = Santa Barbara formation (mudstone)
Pp = Pico formation (sandstone, shale, conglomerate)
Pr = Repetto formation (sandstone, shale, conglomerate)
Msm = Santa Margarita formation (shale, thick sandstone)

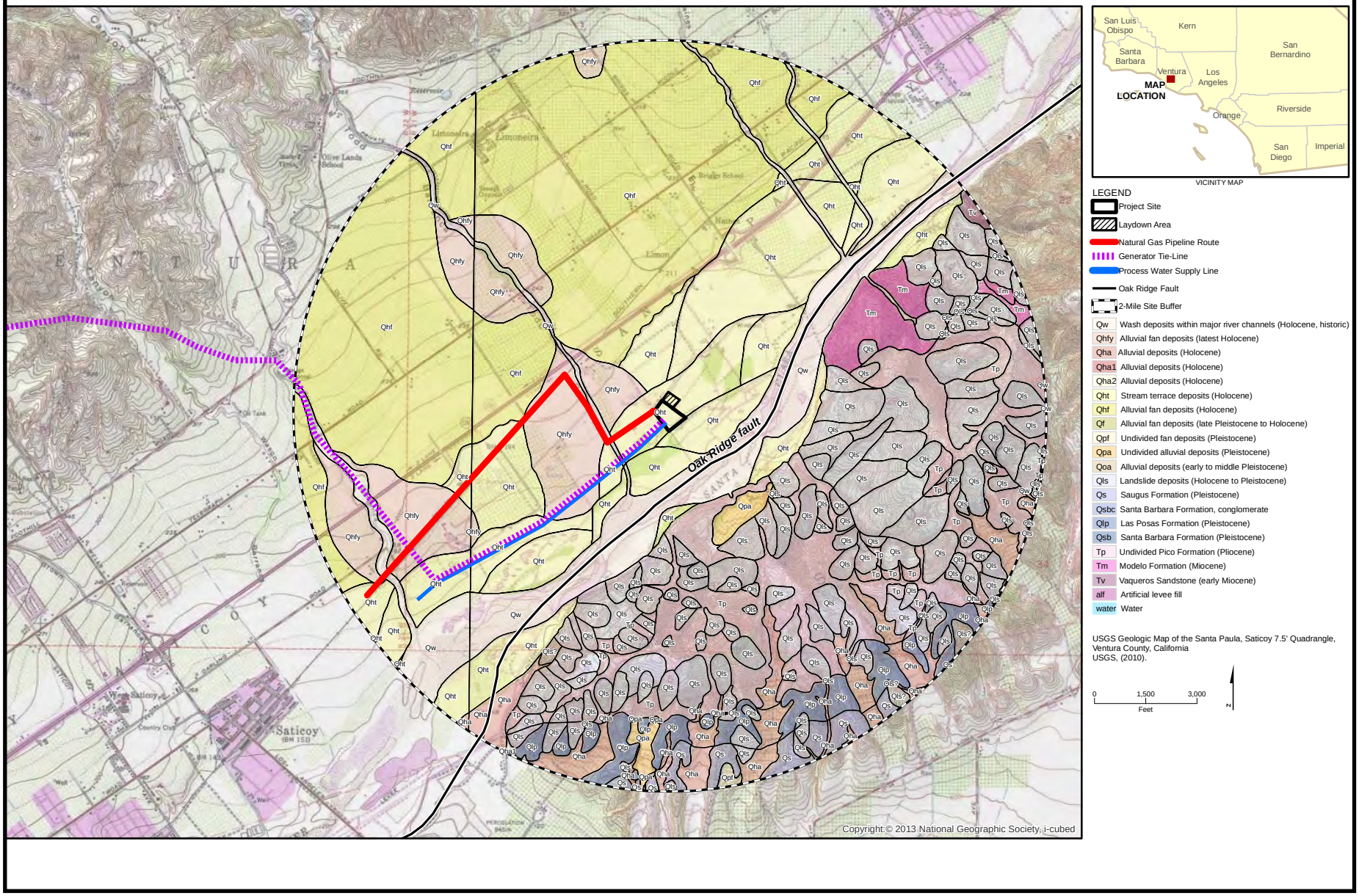
Mm = Monterey formation (shale, chert, diatomite)
Mr = Rincon formation (shale, mudstone)
Mv = Vaqueros formation (sandstone, shale)
Tsp = Sespe formation (mainly red beds)
Elj = Llajas formation (shale, silty sandstone)
Ess = Santa Susana formation (shale)
Emz = Martinez formation (sandstone, conglomerate, shale)

Ec = Coldwater formation (sandstone)
Ecd = Cozy Dell formation (black shale, sandstone)
Emj = Matilija formation (sandstone, grit)
Eef = Echo Falls formation (black shale)
Ett = Topatopa formation (Ettu, upper white spotted greenish sandstone; Ettm, middle white grit; Ettl, lower thin-bedded greenish sandstone)
Es = Sisar formation (black shale)
Ew = Wheeler formation (sandstone)
Kc = Chico formation (shale, sandstone)

SOURCE: Norris and Webb, 1990, Geology of California, Figure 10-7

GEOLOGY AND PALEONTOLOGY - FIGURE 5

Mission Rock Energy Center Project - Surface Geology Within Two Miles of Project Site



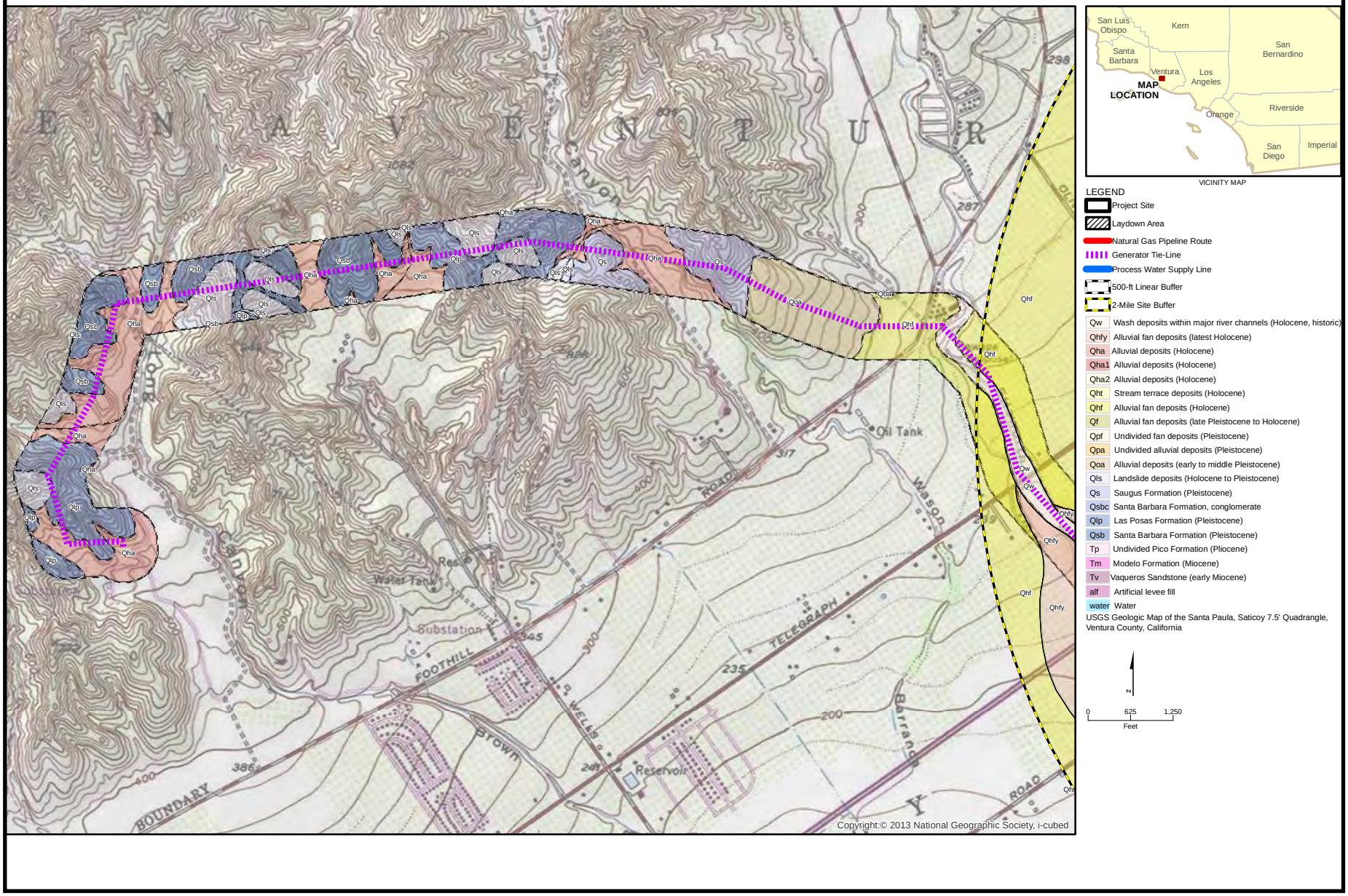
GEOLOGY AND PALEONTOLOGY

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.4-1

GEOLOGY AND PALEONTOLOGY - FIGURE 6

Mission Rock Energy Center Project - Surface Geology Around Project Linears



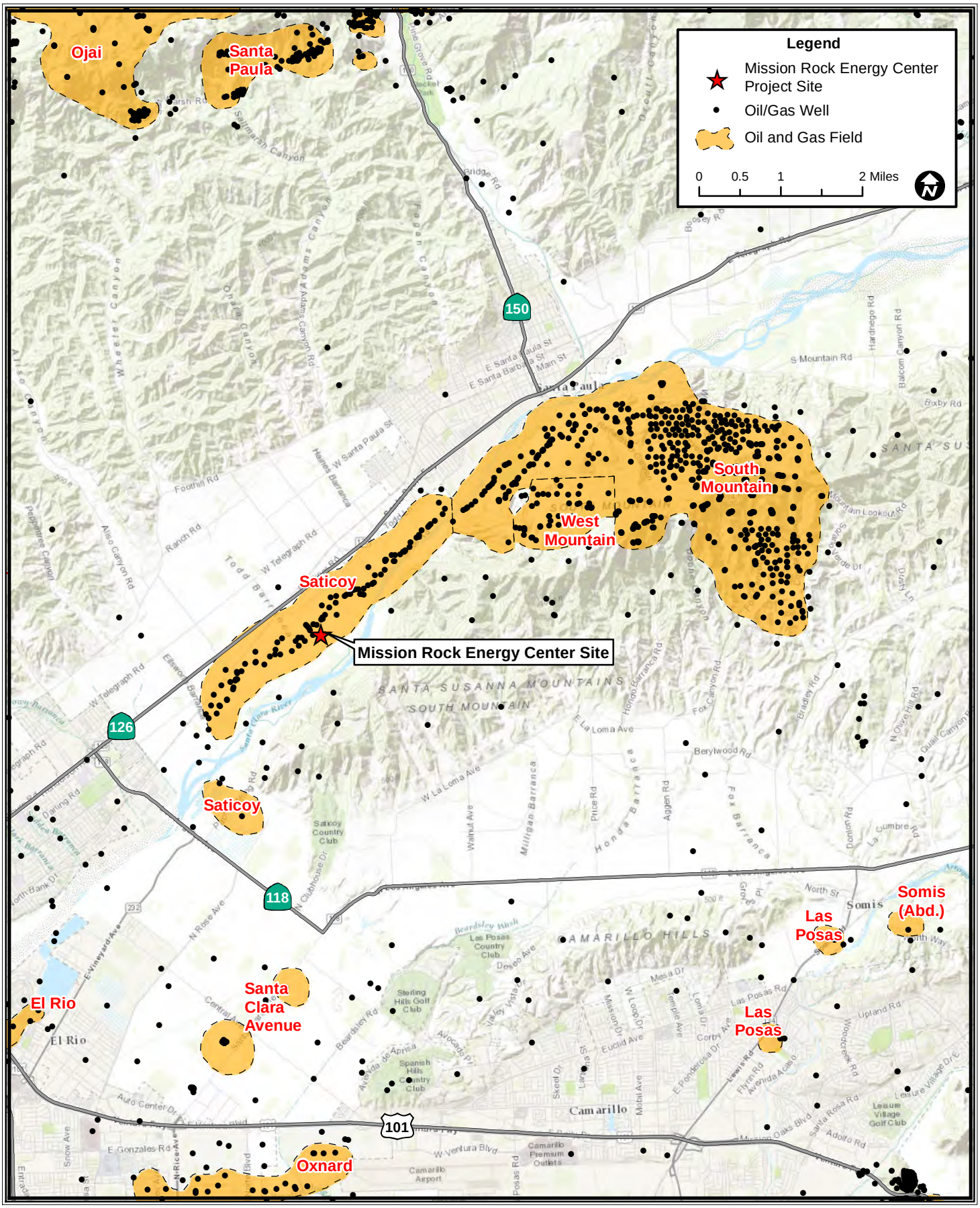
GEOLOGY AND PALEONTOLOGY

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.4-2

GEOLOGY AND PALEONTOLOGY - FIGURE 7

Mission Rock Energy Center Project - Ventura Basin Oil Fields

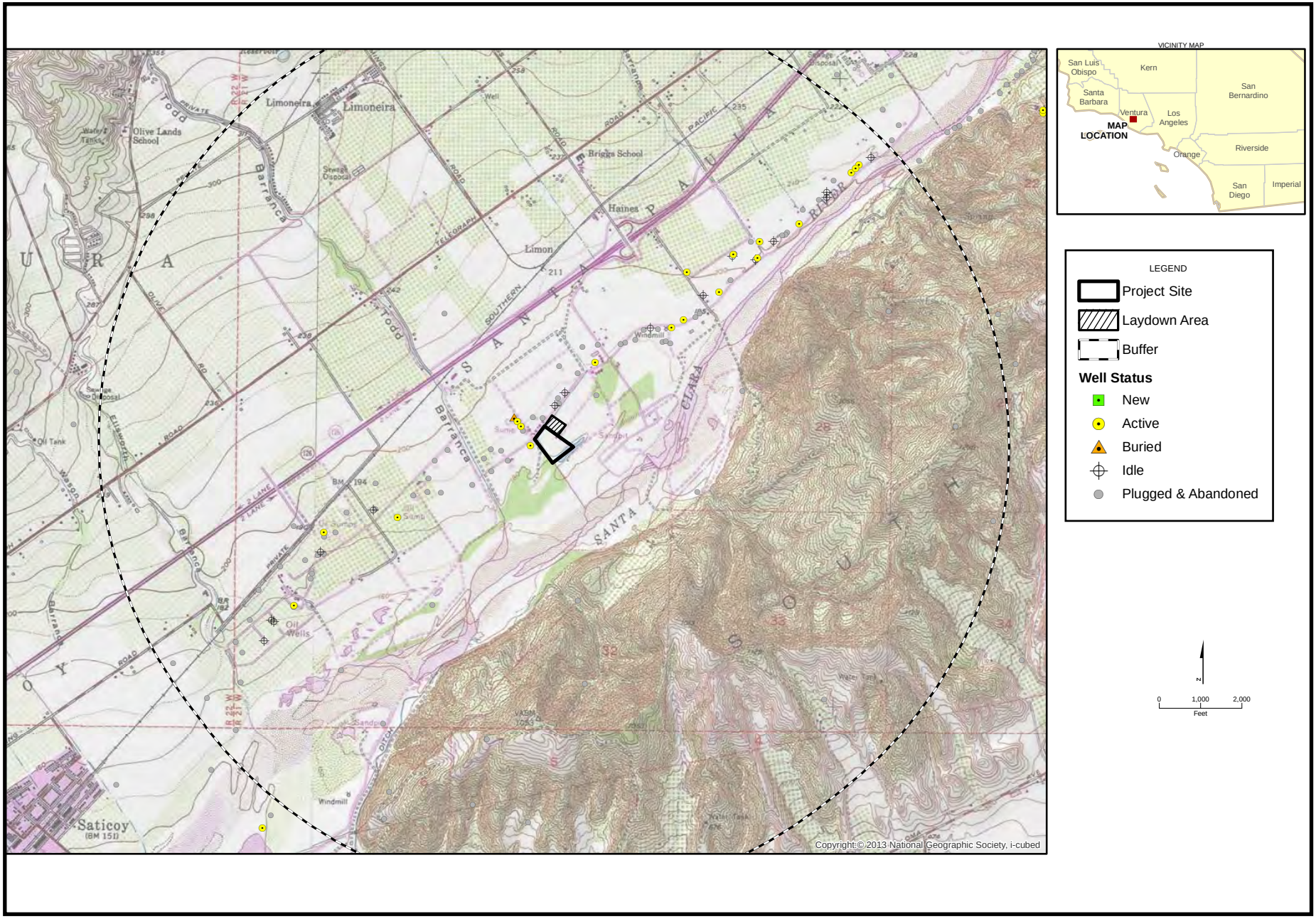


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR)

GEOLOGY AND PALEONTOLOGY - FIGURE 8

Mission Rock Energy Center Project - Oil and Gas Resources Within Two Miles of Project Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.4-4

POWER PLANT EFFICIENCY

Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

Mission Rock Energy Center (Mission Rock) would generate 275 megawatts (MW) (net output[1]) of electricity at an overall project fuel efficiency of 39 percent lower heating value (LHV[2]) at maximum full load[3]. While it would consume substantial amounts of energy, it would do so in a sufficiently efficient manner to satisfy the project's objectives of producing peak-load electricity and ancillary load-following services. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. The battery energy storage system and synchronous condenser would not impact Mission Rock's overall thermal efficiency.

Staff therefore concludes that the project would not present significant adverse impacts upon energy resources. No conditions of certification are proposed for power plant efficiency.

INTRODUCTION

In keeping with the California Environmental Quality Act (CEQA), the California Energy Commission (Energy Commission) must make findings on whether the energy use by a power plant would create significant adverse impacts on the environment. If the Energy Commission finds that a power plant's energy consumption creates a significant adverse impact, it must further determine if feasible mitigation measures could eliminate or minimize that impact. Therefore, in this analysis, staff addresses whether inefficient and unnecessary consumption of energy would occur at Mission Rock and examines:

- whether the project would present any adverse impacts upon energy resources;
- whether these adverse impacts are significant; and if so,
- whether feasible mitigation measures or alternatives could eliminate those adverse impacts or reduce them to a less-than-significant level.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

No Federal, State or local/county laws, ordinances, regulations and standards (LORS) apply to the efficiency of this project.

[1] Net output is the facility's gross electricity generation minus its parasitic electricity (load) requirements, or the amount of electricity that the facility delivers to the electricity grid.

[2] LHV is lower heating value, or a measurement of the energy content of a fuel correcting for post-combustion water vapor.

[3] At site annual high temperature of 79°F and relative humidity of 43 percent (CAL 2015a, AFC Figure 2.1-3)

SETTING

The applicant proposes to install and operate five General Electric (GE) LM6000PG natural gas-fired combustion turbine generators (also referred to as gas turbines, combustion turbines, or CTGs) in a simple-cycle configuration, a 25 MW battery energy storage system, and a synchronous condenser. The energy storage system can be operated in conjunction with the CTGs or separately. (CAL 2015a, AFC § 2.0). Mission Rock would provide peaking and load following power[4] to the Ventura County area (CAL 2015a, AFC §§ 1.0, 1.1, 2.1.2).

Natural gas would be delivered to Mission Rock via 2.4 miles of new 16-inch-diameter pipeline from an existing Southern California Gas Company (SoCalGas) natural gas transmission pipeline (CAL 2015a, AFC §§ 1.3, 2.2.2.3, 4.0).

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE OF ENERGY RESOURCES

CEQA guidelines, Section 15126.4, state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy". Appendix F of the guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce the wasteful, inefficient, and unnecessary consumption of energy.

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas, 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 thermal power plant large enough to fall under the Energy Commission siting jurisdiction (50 MW [net] or greater), such as Mission Rock, by definition, consumes large amounts of energy. Mission Rock would consume natural gas at a maximum rate

[4] As a matter of comparison, peaking facilities are those dispatched as a last resort to meet increasing electric power demand. Load following facilities are those which are dispatched to address rapid changes in demand (e.g., the morning ramp) or in generation (e.g., as renewable energy resources such as solar thermal facilities rapidly increase, a load following unit will ramp down to ensure supply and demand are matched).

of approximately 2,780 million Btu[5] (mmBtu) per hour. This is a substantial rate of energy consumption, but would not impact energy supplies (See **ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES** below for further discussion). Mission Rock would generate electricity at a full-load efficiency of 39 percent (CAL 2015a, AFC Figure 2.1-3). This efficiency level is comparable to the average fuel efficiency of a typical modern simple-cycle power plant.

Battery Energy Storage System

One feature proposed for this project is the battery energy storage system with an energy storage capacity of 25 MW (CAL 2015a, AFC § 2.1.3). The batteries can be recharged either by operating the CTGs or by pulling electricity from the electricity grid. The Mission Rock's primary objective of this energy storage system is to pull and store excess power from the electricity grid during times of over-generation, typically from intermittent renewable resources. Therefore, it is unlikely that the CTGs would operate often to recharge the batteries, and thus unlikely that much natural gas would be consumed. Even if the CTGs are used for this purpose, electricity would be generated at the same rate of 39 percent thermal efficiency as during normal mode of operation when electricity is produced for real-time delivery to the grid. Thus, the energy storage system would not impact Mission Rock's overall thermal efficiency.

Synchronous Condenser

Another feature proposed for this project is a synchronous condenser to be installed on each of the five CTGs (CAL 2015a, AFC § 2.1.17). The synchronous condenser is a mechanical clutch located between the turbine output shaft and the electric generator. In periods of electrical grid instability or when the grid is loaded with high inductive loads, the clutch can disengage the turbine from the generator and the turbine can then be shut down, while the generator continues to spin. This action allows the generator to synch up to the grid to provide grid voltage and frequency support. No natural gas would need to be consumed when the generator is spinning as a synchronous condenser. The synchronous condenser would not impact Mission Rock's overall thermal efficiency.

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

The applicant has described its source of supply of natural gas for the project (CAL 2015a, p. ES-2, §§ 2.1.7, 4.1). Natural gas for the project would be supplied from an existing SoCalGas natural gas transmission pipeline. The SoCalGas natural gas system is connected to natural gas resources in the Bakken fields and the Permian Basin, spanning the Rocky Mountains, Canada, and the southwest. This represents a resource of considerable capacity.

SoCalGas' Aliso Canyon natural gas storage facility, located above the San Fernando Valley near Los Angeles, if remained closed, would not affect the delivery of natural gas to Mission Rock for the following two reasons: (1) Mission Rock would be located outside the Aliso Canyon gas delivery area; and (2) natural gas distribution Lines 404/406 which would feed Mission Rock are not fed from the Aliso Canyon facility, but

[5] British thermal units

rather, they are extensions of major natural gas backbone Lines 400/401 from Arizona in the southwest.

Staff concludes that there would be adequate natural gas supply and pipeline capacity to meet the project's needs.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

Natural gas would be delivered to the project site via a new 16-inch-diameter natural gas pipeline that would be connected to an existing SoCalGas natural gas transmission pipeline (CAL 2015a, AFC § 2.1.7). Gas supplies would be acquired from gas providers in supply regions accessible through the SoCalGas' gas transmission system. As noted above, this transmission system represents a resource of considerable capacity.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of Mission Rock.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT AND UNNECESSARY ENERGY CONSUMPTION

The evaluation of alternatives to the proposed project that could reduce wasteful, inefficient, or unnecessary energy consumption first requires examination of the proposed project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by both the configuration of the power producing system and the selection of equipment used to generate its power.

Project Configuration

Mission Rock's power block would be configured as five independent simple-cycle power trains in parallel, in which electricity is generated by five CTGs. This configuration, with its short start-up time and fast ramping[6] capability, is well suited for providing peaking and load following power.

Efficiency of Alternatives to the Project

Alternative Generating Technologies

For purposes of this analysis, staff considered solar technology, other fossil fuels, nuclear, biomass, hydroelectric, wind, geothermal technologies, and 100 percent battery energy storage, as alternative generating technologies for Mission Rock. Due to regulatory prohibitions, nuclear technology was rejected. Biomass, hydroelectric, geothermal, wind, and solar technologies were ruled out due to the lack of adequate space on the project site and/or the unavailability of these energy resources in the project area. And, coal and oil are highly polluting and would be difficult to permit. With the exception of large hydroelectric, battery energy storage, and oil, these technologies do not meet the project objective of providing peak-load electricity.

Although Mission Rock gas turbines would not consume energy in a wasteful or inefficient manner and would present no significant adverse impacts upon energy

[6] Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

resources, one alternative technology that may eliminate onsite consumption of large amounts of natural gas associated with operation of the project's five gas turbines would be 100 percent battery energy storage. Mission Rock's proposed simple-cycle units and 25-MW battery storage system could be potentially replaced with a 200-MW battery storage system (maximum MW that could easily fit on the site) that would be fully fed from the electric transmission grid. Battery storage can provide operational flexibility, having the capability to discharge electricity back to the grid virtually instantaneously. However, under this alternative, the project would potentially need to be supplemented by natural gas-fired units co-located at the Mission Rock. This would ensure that the facility is reliable enough to generate electricity whenever it's needed to provide fill-in energy, for example, due to unavailability of solar energy (evenings and night) or wind, or when the cost of natural gas generation is more economical. For a more detailed description and evaluation of this alternative technology and a comparison of its potential environmental impacts to those associated with the proposed project, see the **Alternatives** section of this staff assessment.

Natural Gas-Fueled Technologies

Fuel consumption is one of the most important economic factors in selecting a turbine generator; fuel typically accounts for over two-thirds of the total operating costs of a natural gas-fired power plant. Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel-efficient machinery.

Modern gas turbines embody the most fuel-efficient electric generating technology currently available. Each one of the five GE LM6000PG CTGs proposed for the Mission Rock project is nominally rated at 59 MW gross with a 40 percent ISO-rated[7] efficiency (GTW 2016). There are alternative simple-cycle gas turbines that can meet the project's objectives of the generating capacity requirement and peaking/load following services. They include the P&W FT4000 SwiftPac 60, which is an aeroderivative gas turbine adapted from the Pratt & Whitney aircraft engines, and the Siemens SGT-800, which is an aeroderivative gas turbine adapted from the Siemens Power Generation aircraft engines.

The P&W FT4000 SwiftPac 60 gas turbine is nominally rated at 52 MW gross and a fuel efficiency of 41 percent at ISO conditions in a simple-cycle configuration (GTW 2016). The Siemens SGT-800 gas turbine is nominally rated at 53 MW[8] gross and 39 percent efficiency at ISO conditions in a simple-cycle mode (GTW 2016). See **Efficiency Table 1** below for comparison.

[7] ISO (International Organization for Standardization): In this case, ISO Standard 27.040 for measurement of gas turbine capacity. These standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure.

[8] ISO rated MW gross values are used here because site-specific values are not available for the comparable systems, such as the FT4000 SwiftPac 60 and SGT-800. The 59 MW gross rating used here for the LM6000 turbine, resulting in 295 MW (59 x 5 CTGs) plant-wide thus does not reflect the site-specific design conditions such as site elevation, air inlet and outlet pressures, and parasitic loads which result in 275 MW net referenced elsewhere in this power plant efficiency analysis.

Efficiency Table 1
Simple-Cycle Comparison at ISO Conditions

Gas Turbine	ISO Rated Gross Output (MW)	ISO Efficiency (Percent)
GE LM6000PG Sprint	59	40
P&W FT4000 SwiftPac 60	52	41
Siemens SGT-800	53	39

Source: GTW 2016

As shown in **Efficiency Table 1**, the rated thermal efficiencies among these gas turbines vary only slightly. Furthermore, actual performance may vary and is based on project site conditions, such as annual range of ambient temperature and humidity, and any differences in actual operating efficiency between these turbines may be insignificant. Staff concludes that in terms of thermal efficiency, the GE LM600PG is an appropriate choice for the project.

Inlet Air Cooling

A gas turbine's power output decreases as ambient air temperatures rise. Cooling the air as it enters the turbine increases its power output and cycle efficiency. Therefore, alternative gas turbine inlet air cooling methods are usually evaluated as a part of the equipment selection process for a power plant. The two most common techniques are chillers, and evaporative coolers or foggers. Both increase power output by cooling gas turbine inlet air. A mechanical chiller offers greater gross power output than the evaporative cooler on hot, humid days; however, it consumes electricity to operate its refrigeration process, slightly reducing the turbine's overall net power output and efficiency. An absorption chiller uses less electricity but necessitates the use of a substantial amount of ammonia. An evaporative cooler or fogger boosts power output most efficiently on dry days; it uses less electricity than a chiller, possibly producing a slightly higher operating efficiency. Efficiency differences between these alternatives are relatively minor.

The applicant proposes an inlet air mechanical chiller for Mission Rock (CAL 2015a, AFC §§ 1.3, 2.1.8). Given the relative lack of clear superiority of one system over another in terms of thermal efficiency, staff believes that the chiller system proposed by the applicant would have no significant adverse energy impacts.

In conclusion, the project configuration (simple-cycle), generating equipment (LM6000PG), and inlet air chiller chosen represent a sufficiently efficient combination to satisfy the project objective of efficient power production with operational flexibility as identified in the Application for Certification, Project Objectives (CAL 2015a, AFC § 1.1).

CUMULATIVE IMPACTS

No nearby projects have been identified that could potentially combine with the project to create cumulative impacts on natural gas resources. Note that the SoCalGas natural gas supply system draws from extensive supplies originating in the Rocky Mountains, in the southwest, and in Canada. If SoCalGas' Aliso Canyon natural gas storage facility

remains closed, it would not affect the delivery of natural gas to Mission Rock, since Mission Rock would be located outside the Aliso Canyon gas delivery area. Staff concludes that the SoCalGas system is adequate to supply the project without creating a significant cumulative impact.

CONCLUSIONS

The project would generate 275 MW (net output) of electricity at an overall project fuel efficiency of 39 percent LHV at maximum full load. While it would consume substantial amounts of energy, it would do so in a sufficiently efficient manner to satisfy the project's objectives of producing peak-load electricity and ancillary load-following services. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. The battery energy storage system and synchronous condenser would not impact the project's overall thermal efficiency. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources.

PROPOSED CONDITIONS OF CERTIFICATION

No conditions of certification are proposed.

REFERENCES

CAL 2015a – Calpine Company (TN207151-1). Application for Certification, Mission Rock Energy Center, Vol I. December 30, 2015

GTW 2016 – Gas Turbine World. Gas Turbine World 2016 Performance Specs, Simple Cycle OEM Design Ratings, pp. 10-18.

POWER PLANT RELIABILITY

Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

In terms of equipment availability, plant maintainability and maintenance program, fuel availability, and power plant reliability in relation to natural hazards, the project would be built in accordance with typical industry norms for reliable power generation. However, to fully ensure its reliable operation, a reliable source of process water supply is needed, which the applicant has not secured yet. Staff will provide further analysis regarding process water supply in the Final Staff Assessment (FSA). The battery energy storage system and synchronous condenser would perform reliably and would not adversely affect the project's availability factor. No conditions of certification are proposed for power plant reliability.

INTRODUCTION

This analysis evaluates Mission Rock to determine if the power plant would be built in accordance with typical industry norms for reliable power generation. Staff uses these norms because they ensure that the project would not degrade the overall reliability of the electric system it serves (see **SETTING** below). The scope of this power plant reliability analysis covers the following benchmarks:

- equipment availability;
- plant maintainability and maintenance program;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff uses the above benchmarks as appropriate industry norms to evaluate the project's reliability and determine if its availability factor is achievable.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

No Federal, State or local/county laws, ordinances, regulations, or standards apply to power plant reliability.

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), which purchase, dispatch, and sell electricity throughout the state. How the California ISO and other control area operators ensure system reliability is an evolving process; new protocols are being developed and put in place to ensure sufficient reliability with the integration of renewable power sources in the competitive market system.

Historically, one of the primary mechanisms used to ensure system reliability was the California ISO's "Reliability Must-Run" (RMR) power purchase agreement. In recent years, the means of ensuring system reliability have shifted from RMR agreements to the California Public Utilities Commission's (CPUC's) Resource Adequacy (RA) program. Nearly all RAs have "Participating Generator Agreement", or PGA, to ensure an adequate supply of reliable power. PGA allows the California ISO operators to invoke "command and control" authority on PGA resources and forces resources to conform to the California ISO Tariff.

The California ISO also requires that power plants selling ancillary services fulfill certain requirements, including:

- filing periodic reports on power plant reliability;
- reporting all outages and their causes; and
- scheduling all planned maintenance outages with the California ISO.

The above mechanisms to ensure adequate power plant reliability have been developed with the assumption that each new power plant in California will exhibit reliability levels similar to those of other power plants currently serving the state's electric system. New power plants should operate in a manner to at least maintain the industry's current level of reliability.

ASSESSMENT OF IMPACTS

METHOD FOR DETERMINING RELIABILITY

Staff takes the approach that a power plant project is reliable if it does not degrade the reliability of the utility system to which it is connected. This is the case if a project is at least as reliable as other power plants on that system.

The equivalent availability factor of a power plant is the percentage of time it is available to generate power, accounting for both planned and unplanned (or forced) outages. Measures of power plant reliability are based upon both the plant's ability to generate power when it is considered to be available, and upon starting failures and forced outages. For practical purposes, reliability can be considered a combination of these industry measures, making a reliable power plant one that is available when called upon to operate. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability requires adequate levels of equipment availability, power plant maintainability, fuel and water availability, and resistance to natural hazards. The following analysis evaluates these measures.

EQUIPMENT AVAILABILITY

Equipment availability would be ensured by adoption of appropriate quality assurance/ quality control (QA/QC) programs during the design, procurement, construction, and operation of the plant and by providing for adequate maintenance and repair of project equipment and systems.

QA/QC Program

The applicant describes a QA/QC program (CAL 2015a, § 2.2.2.5) that is typical of the power industry. Equipment would be purchased from qualified suppliers based on technical and commercial evaluations. The QA/QC program would include performing receipt inspections, testing of components, and administering independent testing contracts. Implementation of this program would result in adequate reliability of operational equipment.

Equipment Redundancy

A generating facility must be capable of being maintained while operating. A typical approach to this is to provide redundant examples of pieces of equipment that are most likely to require service or repair.

The applicant plans to provide an appropriate redundancy of function for the project (CAL 2015a, § 2.2.2.2, Table 2.2-1). For example, the lube oil system in the combustion turbine generator (also referred to as gas turbine, combustion turbine, or CTG) would include redundant pumps, compressors, filters, and coolers, and redundant microprocessors and sensors would be provided in the turbine's control system. Because the project would consist of five CTGs, operating in parallel as independent power trains, it would be inherently reliable. A single equipment failure cannot disable more than one train, allowing the remaining trains to continue to operate. Also, technology advancements have led to extremely high reliability for the CTG considered for this project, the General Electric (GE) LMS6000PG. Staff concludes that the project's proposed equipment redundancy would be sufficient for its reliable operation.

Battery Energy Storage System

One feature proposed for this project is the battery energy storage system (CAL 2015a, AFC § 2.1.3). The energy storage system would provide a redundant source for power generation, in event of an interruption of power from the CTGs.

The equivalent availability factor of 92 to 98 percent expected for the CTGs is based on their decades of operating experience and is independent of the operating characteristics of the energy storage system. The battery array would not be connected to the Mission Rock power block but would only be connected to the electrical switchgear in the facility. So while the energy storage system can store electricity generated by the CTGs, it is not required to do so. As such, the battery system can be charged, and can discharge electricity, independent of the operating status of the CTGs and would not adversely affect the CTGs' availability factor.

The equipment related to the energy storage system that would be installed at Mission Rock would be subject to commercial guarantees for both output and availability provided by the equipment vendor as is customary (CH2M 2016b), resulting in its reliable operation.

Synchronous Condenser

Another feature proposed for this project is a synchronous condenser to be installed on each one of the five CTGs (CAL 2015a, AFC § 2.1.17). The synchronous condenser is a mechanical clutch located between the turbine output shaft and the electric generator. In periods of electrical grid instability or when the grid is loaded with high inductive loads, the clutch can disengage the turbine from the generator and the turbine can then be shut down, while the generator continues to spin. This action allows the generator to synch up to the grid to provide grid voltage and frequency support. When the CTG is needed to begin to generate electricity, the turbine can be reconnected to the generator via the clutch. The turbine would then be started in the normal fashion.

Operation of the generator as a synchronous condenser would have the same historic availability as the project's CTGs. The synchronous condenser is a well-tested component and has been used in other power plants worldwide. The CTG's expected 92 to 98 percent availability factor is based on its well-established operating experience and includes the availability factor for the synchronous condenser.

PLANT MAINTAINABILITY AND MAINTENANCE PROGRAM

Equipment manufacturers provide maintenance recommendations for their products, and power plant owners usually develop their plant's maintenance program based on those recommendations. Such a program encompasses both preventive and predictive maintenance techniques. Mission Rock would develop its maintenance program in the same way (CAL 2015a, § 2.1.17). Additionally, because Mission Rock would be expected to operate only up to 28.5 percent of the time (CAL 2015a, §§ 2.1.2, 2.1.9.1, 2.2.12), there would be ample opportunity to conduct maintenance during planned off-line periods, thus having no effect on its projected operating plan. Therefore, staff believes the project would be adequately maintained to ensure an acceptable level of reliability.

FUEL AND WATER AVAILABILITY

The long-term availability of fuel and of water for cooling or process use is necessary to ensure the reliability of any power plant. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant could be curtailed, threatening the power supply.

Fuel Availability

Mission Rock would use natural gas supplied by Southern California Gas Company (SoCalGas) and would connect to a new gas metering station adjacent to the Mission Rock power block (CAL 2015a, p. ES-2, §§ 2.1.7, 4.1). Gas supplies would be acquired from gas providers in supply regions accessible through the SoCalGas' natural gas transmission system. This transmission system is connected to natural gas resources in the Bakken fields and the Permian Basin, spanning the Rocky Mountains, Canada, and the southwest. This represents a resource of considerable capacity.

SoCalGas' Aliso Canyon natural gas storage facility, located above the San Fernando Valley near Los Angeles, if remained closed, would not affect the delivery of natural gas

to Mission Rock for the following two reasons: (1) Mission Rock would be located outside the Aliso Canyon gas delivery area; and (2) the natural gas distribution Lines 404/406 which would feed Mission Rock are not fed from the Aliso Canyon facility, but rather, they are extensions of the major natural gas backbone Lines 400/401 from Arizona in the southwest.

Therefore, staff believes there would be adequate fuel supply to meet the project's needs.

Water Supply Reliability

Mission Rock would be composed of multiple simple-cycle combustion turbine generators, so it would not have a steam cycle for power production (CAL 2015a, p. ES-5, § 1.3). Thus, process water use would be substantially reduced from what is needed for a power plant of similar MW capacity with a steam cycle.

Potable water would be provided by the city of Santa Paula. In the event that there is an interruption of this potable water source, Mission Rock is prepared to transport potable water to the site by truck, a method that the applicant states it has successfully used in several other power plants (CAL 2015a, § 5.15, CH2M 2017i).

The applicant proposes to use recycled water from Limoneira Company for process water. However, the applicant has not secured this source of process water supply; it is currently unavailable to serve the project. Therefore, at this time, staff cannot conclude that the project's source of process water supply is reliable. For further discussion of water supply, refer to the **Soil and Water Resources** section of this staff assessment.

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. Seiches (waves in inland bodies of water) and tsunamis (tidal waves) are not likely to present hazards for this project given its location 10 miles inland from the coast. However, seismic shaking (earthquakes) and flooding could present credible threats to the project's reliable operation.

Seismic Shaking

According to the applicant, the project area has experienced strong ground motion during past earthquakes and it is likely that strong earthquakes causing seismic shaking will occur in the future (CAL 2015a, § 5.4.1.3, Figure 5.4-1). The project area can be characterized as an active seismic area, with potentially large-magnitude earthquakes (see CAL 2015a, Figure 5.4-3). However, the project would be designed and constructed to meet the latest applicable engineering codes. Compliance with the latest seismic design requirements represents an upgrading of performance during seismic shaking compared to older facilities since these requirements have been continually upgraded and made more stringent. Because the project would be built to the latest seismic design requirements, this project would be expected to perform better than existing plants in the electric power system.

Staff has proposed conditions of certification to ensure project compliance with these requirements; see **Geology and Paleontology** Condition of Certification **GEO-2** and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1**. These conditions of certification include standard engineering design requirements for mitigation of strong seismic shaking, liquefaction, and potential excessive settlement due to dynamic compaction. Therefore, staff believes there are no concerns with the project's functional reliability due to seismic shaking.

Flood Plain

The site is in the Federal Emergency Management Agency's (FEMA's) 100-year flood zone (CAL 2015a, § 5.15.1.3). Nevertheless, the applicant is proposing to increase the elevation of the project site to a level of 1 foot above the flood plain elevation. Also, project features would be designed and built to provide adequate levels of flood resistance by complying with **Facility Design** Conditions of Certification **GEN-1**, **CIVIL-1**, **CIVIL-3**, and **CIVIL-4**. Therefore, staff believes there are no concerns with the project's functional reliability due to flooding.

Tsunami

U.S. building codes generally have not addressed the subject of designing structures in tsunami zones. The FEMA's Coastal Construction Manual (FEMA 2013) developed to provide design and construction guidance for structures built in coastal areas addresses seismic loads for coastal structures and provides information on tsunami and associated design loads. This manual cites ASCE Standard ASCE 7-10, Minimum Design Loads for Buildings and Other Structures, as the reference to be consulted during design of structures. ASCE 7-10 is codified in the California Building Code (CBC). To meet general engineering requirements, Mission Rock would be designed and constructed in accordance with the CBC, as required by **GEN-1**. Furthermore, since the Mission Rock site is not a coastal area and is located 10 miles from the Pacific Ocean and roughly 180 feet above mean sea level, it is not subject to tsunami threat. For further discussion, see the **Geology and Paleontology** section of this staff assessment.

COMPARISON WITH EXISTING GENERATING EQUIPMENT

Industry statistics for equivalent availability factors are maintained by the North American Electric Reliability Corporation (NERC). NERC regularly polls North American utility companies on their project reliability through its Generating Availability Data System, and periodically summarizes and publishes those statistics on the Internet (http://www.nerc.com). In its latest report, for the years 2010 through 2015, NERC reports an equivalent availability factor of 88.9 percent for CTGs (combustion turbine generators) with a capacity of 50 MW and greater (NERC 2016). Since the Mission Rock's CTGs are rated above 50 MW (57 MW gross), they fall within this range, and thus staff uses this 88.9 percent availability factor for comparison to Mission Rock.

Each one of the project's five CTGs would be a modern GE LM6000PG gas turbine. This is a highly successful turbine generator, which has been in commercial operation for many years and has exhibited high reliability. The Mission Rock's CTG can well be expected to outperform the fleet of various, mostly older, CTGs that make up the NERC statistics. The applicant has committed to functional testing, performance testing,

reliability runs, and warranty claims, as well as extensive QA/QC during the commissioning and start-up of the facility (CAL2015a, § 2.2.2). Also, as explained above, the power plant components would be equipped with redundant features. These measures would ensure that the project's generating equipment would exhibit high reliability throughout their operating life. Therefore, the applicant's expectation of an equivalent availability factor of 92 to 98 percent is reasonable when compared to the NERC's availability factor of 88.9 percent.

CONCLUSIONS

In terms of equipment availability, plant maintainability and maintenance program, fuel availability, and power plant reliability in relation to natural hazards, the project would be built in accordance with typical industry norms for reliable power generation. However, to fully ensure its reliable operation, a reliable source of process water supply is needed, which the applicant has not secured yet. Staff will provide further analysis regarding process water supply in the FSA. The battery energy storage system and synchronous condenser would perform reliably and would not adversely affect the project's availability factor. No conditions of certification are proposed for power plant reliability.

PROPOSED CONDITIONS OF CERTIFICATION

No Conditions of Certification are proposed.

REFERENCES

CAL 2015a – Calpine Company (TN207151-1). Application for Certification, Mission Rock Energy Center, Vol I. December 30, 2015

CH2M 2016b – CH2M Hill (TN211312) Mission Rock Data Adequacy Supplement, page 2-1. April 29, 2016

CH2M 2017i – CH2M Hill (TN216436). Responses to Data Requests Set 5, Data Response 173. March 8, 2017

FEMA 2013 – Federal Emergency Management Agency, FEMA P-55, Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas (4th edition), Nov 13, 2013.

NERC (North American Electric Reliability Corporation) 2016 – Generating Availability Data Survey (GADS) for 2010–2015 Reporting Period, Brochures #1 and #5. November 16, 2016.

TRANSMISSION SYSTEM ENGINEERING

Laiping Ng and Mark Hesters

SUMMARY OF CONCLUSIONS

The proposed Mission Rock Energy Center (Mission Rock) facilities between the new generators and the Southern California Edison (SCE) Santa Clara Substation including the step-up transformer, the 230 kV overhead transmission line, and termination are acceptable and would comply with all applicable Laws, Ordinances, Regulations and Standards (LORS).

- Mission Rock has withdrawn from the California Independent System Operators (California ISO) interconnection process for Queue Cluster 9 (Cluster 9) and rejoined in Queue Cluster 10 (Cluster 10). The Cluster 10 Phase I Interconnection Study will not be available until the first quarter of 2018. Any discussion of potential downstream transmission impacts is preliminary and may be revised after review of the Cluster 10 study.

INTRODUCTION

STAFF ANALYSIS

This Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all applicable LORS required for safe and reliable electric power transmission. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission (Cal Code Regs, tit 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities that would be required downstream of the proposed interconnection and that represent the "whole of the action."

Energy Commission staff analyzes studies performed by the interconnecting authority, in this case the California ISO, to determine the impacts on the transmission grid from the proposed interconnection. Staff's analysis also identifies new or modified facilities downstream of the first point of interconnection that may require mitigation measures. The proposed project would connect to the SCE transmission network and requires analysis by SCE and approval of the California ISO.

ROLE OF SOUTHERN CALIFORNIA EDISON

SCE is responsible for ensuring electric system reliability on its transmission system with the addition of the proposed transmission modifications, and determines both the standards necessary to ensure reliability and whether the proposed transmission modifications conform to existing standards.

The California ISO will provide analysis in its Phase I and Phase II Interconnection Studies, its approval for the facilities, and changes required in its system to add the proposed transmission modifications.

ROLE OF CALIFORNIA INDEPENDENT SYSTEM OPERATOR

The California ISO is responsible for dispatching generating units in California, ensuring electric system reliability for all participating transmission owners and for developing the standards and procedures necessary to maintain system reliability. The California ISO will review SCE's studies to ensure the adequacy of the proposed transmission interconnection. The California ISO will also determine if the proposed transmission modifications of the SCE transmission system will impact overall system reliability. According to the California ISO Tariff, it will determine the need for transmission additions or upgrades downstream from the interconnection point to ensure reliability of the transmission grid. The California ISO performs the Phase I and Phase II Interconnection Studies and provides its analysis, conclusions, and recommendations. If necessary, the California ISO provides written and verbal testimony on its findings at the Energy Commission hearings.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), "Rules for Overhead Electric Line Construction," formulates uniform requirements for construction of overhead 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 (CPUC) General Order 128 (GO-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, 2007 provides electrical, mechanical, civil and structural requirements for overhead electric line construction and operation.
- The North American Electric Reliability Corporation (NERC) Reliability Standards define the plans, policies & procedures, methodologies & system models, coordination & responsibilities, and performance criteria for reliable planning, control and operation of the North American Bulk Electric System (BES) over broad spectrum of system conditions and following a wide range of probable disturbances. The Standards cover all aspects of an interconnected BES such as: Transmission system planning & operation, consistent data (steady-state and dynamic) for modeling and simulation, facility ratings methodology and connections, balancing real power, resources & load demand, procedures for voltage control & reactive power, system protection, control, communications & security, nuclear plant interface coordination, emergency operation planning and system restoration plans.

The transmission planning standards stipulate periodic system simulations and associated assessments over a planning horizon by the planning authority and transmission planner to ensure that reliable systems are planned with sufficient lead time to meet the system performance requirements and continue to be modified or upgraded as necessary for operating the network reliably to supply projected customer demands and firm transmission services under normal and forced or maintenance outage system conditions (NERC 2005-10).

- The Western Electric Coordinating Council (WECC) Regional System Performance Criteria is similar to the system performance limits as defined in NERC transmission planning standards. The WECC performance criteria incorporate the Table I of the NERC transmission planning standards and in addition include the WECC Disturbance-Performance Table W-1 which provides standards for transient voltage and frequency limits, and post-transient system voltage variation. Certain aspects of the WECC performance criteria are either more stringent or specific than the NERC standards such as inclusion of contingency event frequencies and additional Category C & D contingencies. Adequate reactive power resources planning criteria for transfer path ratings and post-transient voltage stability are also included. For any past disturbance that actually resulted in cascading outages in the interconnected system, the WECC performance criteria require remedial action so that future occurrences of such event would not result in cascading (WECC 2008).
- California ISO Planning Standards also provide standards and guidelines to ensure the adequacy, security and reliability in the planning of the California ISO grid transmission facilities. The Standards incorporate the current NERC Reliability Planning Standards and WECC Regional System Performance Criteria. However, the California ISO Standards are more stringent or specific than the NERC standards and WECC performance criteria. The Standards include additional Category B disturbance elements and criteria for existing nuclear plant unit's control. The Standards also address new transmission vs. involuntary load interruptions and San Francisco greater bay area generation outage criteria for conducting grid planning for the bay area. The California ISO Standards apply to the electric systems of all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a).
- California ISO/FERC Electric Tariff provides rules, procedures and guidelines for construction of all transmission additions/upgrades (projects) within the California ISO controlled grid. 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. The Tariff specifies the required Large Generator Interconnection Procedures (LGIP) and Large Generator Interconnection Agreement (LGIA) to be followed for any large generator interconnection to the California ISO controlled grid (California ISO 2010a).

PROJECT DESCRIPTION AND INTERCONNECTION FACILITIES

The Mission Rock Energy Center would be a natural gas-fired, simple-cycle combustion turbine generating facility located west of the city of Santa Paula, Ventura County, California. Mission Rock would consist of five GE LM6000 PG combustion turbine-generators (CTGs), two three-winding generator step-up transformers, a two-winding generator step-up transformer, and twenty-two 1.25 megawatts (MW) inverter units for the battery energy storage system. Mission Rock is expected to generate at a maximum output of 327.5 MW[1].

With the generator auxiliary load of approximately 11.25 MW, internal project losses of 1.095 MW, and generator tie-line losses of 1.95 MW, the net output of Mission Rock to the transmission grid would be approximately 313 MW[2]. The Mission Rock would be interconnected to the SCE Santa Clara Substation. The proposed commercial operation date of Mission Rock is September 2020 (**CAL2015a section 1, CH2M2017g section A**).

POWER PLANT SWITCHYARD AND INTERCONNECTION FACILITIES

Each combustion turbine generator is rated at 76 Megavolt Ampere (MVA) with a power factor of 0.85. The CTG unit 1and unit 2 would each connect to the low side of three-winding 91.2/121.6/152 MVA generator step-up (13.8/230 kV) transformer 1 through its own dedicated 2,000-ampere non-segregated bus duct to generator circuit breaker 1 and 2, each rated 3,000-ampere.

With the similar arrangement, CTG units 3 and unit 4 would each connect to the low side of three-winding transformer 2 through its own non-segregated bus duct to generator circuit breakers 3 and 4, each rated 3,000-ampere.

CTG unit 5 would directly connect to the low side of a two-winding 91.2/121.6/152 MVA generator step-up (13.8/230 kV) transformer 3 through its own 2,000-ampere non-segregated bus duct.

The high side of generator step-up transformers 1, 2 and 3 would each connect through its dedicated 2,000-ampere circuit breakers to the single generator tie bus in the switchyard.

The battery energy storage system consists of twenty-two 1.25 MW inverter units. The rated output capability would be 27.5 MW. The battery energy storage system would be connected through dedicated bus ducts and a 2,000-ampere circuit breaker to the switchyard.

The power plant switchyard would connect to the SCE Santa Clara Substation through an approximately 6.7-mile long generator tie-line. The generator tie-line would connect to the power plant switchyard through a 2,000-ampere disconnect switch. The single

[1] This is the maximum output from the generation units including the battery storage units. The technical data is provided by Mission Rock and is used in the California ISO's interconnection studies.

[2] This is the maximum possible generation output to the SCE transmission grid.

230 kV generator tie-line, supported by single-circuit steel structures, would be strung with 795 kcmil ACSR “Drake” conductor. Power would be transmitted to the SCE grid from the Santa Clara Substation (**CAL2015a section 1, 2, 3, CEC2017e, CH2M2016c DR 99-1**, **CH2M2017g**).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility (SCE in this case) and the control area operator (California ISO) are responsible for ensuring grid reliability. These entities determine the transmission system impacts of the proposed project, and any mitigation measures needed to ensure system conformance with performance levels required by utility reliability criteria, NERC planning standards, WECC reliability criteria, and California ISO reliability criteria. The Phase I and Phase II interconnection studies are used to determine the impacts of the proposed project on the transmission grid. Staff relies on these studies and any review conducted by the California ISO to determine the project’s effect on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards.

The Phase I and Phase II interconnection studies analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the first year of operation and thus are based on a forecast of loads, generation, and transmission. Load forecasts are developed by the interconnecting utility and the California ISO. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties.

CALIFORNIA INDEPENDENT SYSTEM OPERATOR STUDY

Mission Rock withdrew from the California ISO Cluster 9 and is currently in the California ISO’s Cluster 10. The Cluster 10 Phase I Interconnection Study will not be available until the first quarter of 2018. The discussion below is based on the Cluster 9 Phase I Study. Staff expects the study results for Cluster 10 to be similar to the Cluster 9 results; if there are significant differences, and especially newly identified downstream facilities are required, there could be further delays to the project schedule. The California ISO has completed the Queue Cluster 9 Phase I Interconnection Study Report (QC 9 Phase I Report) which included the Mission Rock project. The analysis of the interconnection impacts is based on the Queue Cluster 9 Phase I Report and its appendices.

SCOPE OF QC9 PHASE I INTERCONNECTION STUDY REPORT

The January 17, 2017, QC 9 Phase I Report was completed by the California ISO in coordination with SCE at the request of the project owners, to identify transmission system impacts caused by all the projects in queue cluster 9, including Mission Rock, on SCE's transmission system. The QC 9 Phase I Report for SCE's Northern Bulk Area modeled projects in the queue cluster 9 window, totaling 4,655 MW, including the proposed Mission Rock.

The base cases included all transmission upgrade projects in the generation interconnection process, transmission upgrades identified through the California ISO transmission plan, existing remedial action scheme and operating procedures, mitigation identified through the generation interconnection process, and pre-QC9 transmission upgrades assumptions.

The QC 9 Phase I Report for SCE's Northern Bulk Area was conducted by using the 2021 1-in-10 year full loop on-peak and off-peak base cases with Mission Rock at a net output of 312 MW[3]. Detailed study assumptions are described in the QC9 Phase I Report. Appendix A of the QC9 Phase I Report focuses on the impact contribution from Mission Rock. The Appendix A Report included a power flow reliability assessment comprising discharging and charging analysis, a short-circuit duty study, transient stability evaluation, and deliverability assessment. The power flow study assessed the project's impact on the thermal loading and voltage performance of the transmission lines and equipment. The short circuit study was conducted with all the transmission upgrades and generation projects ahead of the QC9, and generation projects in the QC9 window. The short circuit study is to determine if its interconnection could overstress the existing substation facilities. The transient stability study was conducted using the 2021 on-peak and off-peak cases to determine whether all the projects in QC9 window, including Mission Rock, would create instability in the system following certain selected outages. The deliverability assessment study was performed to identify transmission operating limits that constrain the deliverability of the modeled generators and to determine if the system upgrades would relieve the constraints (**CEC2017g, CH2M2017g**).

QC9 PHASE I INTERCONNECTION STUDY RESULTS

Power Flow Study Results and Mitigation Measures

The power flow analysis includes two parts: discharging analysis and charging analysis of Mission Rock. The discharging analysis determined that Mission Rock would not cause any reliability overloads to the transmission system. However, the deliverability group study showed Mission Rock discharging contributes to thermal overloads in southern California. The studied identified new Mesa – Vincent No. 2 500 kV line and Eldorado-Lugo 500 kV lines as mitigation for the SCE area deliverability overloads. The overloads would result from more than 4,600 MW of QC9 resources connecting in

[3] The California ISO studied 312 MW net output for Mission Rock in the QC 9 Phase I Interconnection Report. However, the MW output studied by California ISO is often different than the MW proposed in the AFC. The MW output proposed in the AFC is what the California Energy Commission would license.

SCE's northern area and more than 20,000 MW in the SCE queue, of which Mission Rock is only 313 MW. Staff does not consider the mitigation for deliverability overloads in SCE's northern area reasonably foreseeable consequences of the interconnection of Mission Rock. Mission Rock would be required to share the cost of these upgrades if they are constructed to ensure the deliverability of QC9 projects. The charging analysis identifies that Mission Rock would not cause any thermal overloads to the transmission system.

No voltage performance issues were identified in the discharging and charging analyses, as Mission Rock is required to provide power factor regulation capability of 0.95 at the point of interconnection (**CH2M2017g** section D).

Short Circuit Analysis and mitigation Measures

With the inclusion of all the projects in the QC9, the short circuit Analysis identified increased short circuit duties during the three-phase-to-ground faults and the single-phase-to-ground faults. Circuit breaker locations and increased fault duties are listed in Table H.1 and Table H.2 of the QC9 Phase I Report.

Interconnecting Mission Rock would overstress four 66 kV circuit breakers in the Moorpark A Substation. Therefore, replacing circuits CB 68, CB 70, CB72 and CB 73 would be required.

In addition, interconnecting the QC9 generation projects would increase ground grid duty by 0.25 kA in 40 SCE substations. For these concerns, the Phase II interconnection study is required to determine if a detailed ground grid analysis would be needed (**CH2M2017g section E**).

Transient Stability Results and Mitigation Measures

Transient stability studies were conducted using the 2021 peak and off-peak base cases to ensure that the transmission system would remain in operating equilibrium after the QC9 generation projects, including Mission Rock, became operational.

The transient stability evaluation indicated with all the generation projects providing a 0.95 power factor at points of interconnection, the addition of Mission Rock would not cause any adverse impacts to the SCE system (**CH2M2017g** section F).

Deliverability Assessment Results and Mitigation Measures

The Deliverability Assessment studies were conducted using the 2021 peak and off-peak base cases. The studies identified that QC9 would cause deliverability constraints on the South of Vincent area and Desert area during peak operations. The Phase I deliverability assessment for QC9 identified construction of new Mesa – Vincent No. 2 500 kV line and Eldorado – Lugo No. 2 500 kV lines as mitigation for these deliverability constraints. The QC9 projects would not cause any deliverability constraints during off-peak operation season (**CH2M2017g** section H).

CUMULATIVE IMPACTS

The TSE analysis focuses on whether or not a proposed project would meet required codes and standards. At all times the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect.

Potential cumulative impacts on the transmission network are identified through the California ISO and utility generator interconnection process. In cases where a significant number of proposed generation projects could affect a particular portion of the transmission grid, the interconnecting utility or the California ISO can study the cluster of projects in order to identify the most efficient means to interconnect all of the proposed projects.

COMPLIANCE WITH LORS

The proposed interconnecting facilities, including the Mission Rock 230 kV switchyard, one 230 kV overhead generator tie-line, and the termination at the SCE Santa Clara Substation, are adequate in accordance with industry standards and good utility practices, and are acceptable to staff. Staff believes that Conditions of Certification **TSE-1** through **TSE-5** will ensure the proposed Mission Rock complies with applicable LORS:

Staff's proposed Conditions of Certification **TSE-1** through **TSE-5** would help ensure that construction and operation of the transmission facilities for the proposed Mission Rock would comply with applicable LORS:

1. Staff proposed Condition of Certification **TSE-1** to ensure that the preliminary equipment is in place for construction of the transmission facilities of the proposed project to comply with applicable LORS.

2. Staff proposed Condition of Certification **TSE-2** to ensure the final design of the proposed transmission facilities would comply with applicable LORS.

3. Staff proposed Condition of Certification **TSE-3** to ensure that the proposed project would be properly interconnected to the transmission grid. TSE-3 also ensures that the generator output would be properly delivered to the transmission system.

4. Staff proposed Condition of Certification **TSE-4** to ensure that the project would synchronize with the existing transmission system and the operation of the facilities would comply with applicable LORS.

5. Staff proposed Condition of Certification **TSE-5** to ensure that the proposed project has been built to required specifications and the operation of the facilities would comply with applicable LORS.

CONCLUSIONS AND RECOMMENDATIONS

- The proposed Mission Rock facilities between the new generators and the SCE Santa Clara Substation, including the step-up transformer, the 230 kV overhead transmission line, and termination, are acceptable and would comply with all applicable LORS. The Mission Rock interconnection with the transmission grid would not require additional downstream transmission facilities (other than those proposed by the applicant) that require CEQA review.

- Interconnection of QC9 generation projects, including Mission Rock, would cause deliverability constraints in the South of Vincent and Desert areas during peak operations. The SCE proposed Mesa – Vincent No. 2 500 kV line and the Eldorado – Lugo No. 2 500 kV line would mitigate these deliverability constraints. Staff does not consider the mitigation for deliverability overloads in SCE's northern area reasonably foreseeable consequences of the interconnection of Mission Rock; however, Mission Rock would be required to share the cost of these upgrades if they are constructed to ensure the deliverability of QC9 projects.
- The proposed Mission Rock would require replacing four 66 kV circuit breakers: CB 68, CB 70, CB72 and CB 73, in the Moorpark A Substation.

- The addition of QC9 projects, including Mission Rock, would increase ground grid duty in 40 SCE substations. The Phase II Interconnection Study for the QC9 will determine if detailed ground grid analysis would be needed for substations with ground grid duty concerns.
- Mission Rock withdrew from the California ISO Cluster 9 and is currently in the California ISO's Cluster 10. The Cluster 10 Phase I Interconnection Study will not be available until the first quarter of 2018. Staff will need the data from the Phase I Interconnection study to complete its Mission Rock transmission analysis in the Final Staff Assessment. Staff expects the study results for Cluster 10 to be similar to the Cluster 9 results; if there are significant differences, especially newly identified downstream facility impacts, there could be further delays to the project schedule.

PROPOSED CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: Prior to the start of construction of transmission facilities, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major

structures and equipment (see list of major equipment in **Table 1:** Major Equipment List below).

Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the monthly compliance report.

Table 1: Major Equipment List

Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower
Grounding system

TSE-2 For the power plant switchyard, outlet line and termination, the project owner shall not begin any construction until plans for that increment of construction have been approved by the CBO. These plans, together with design changes, and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the monthly compliance report:

a) receipt or delay of major electrical equipment;

b) testing or energization of major electrical equipment; and

c) the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: Prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications, and calculations for equipment and systems of the power plant switchyard, outlet line, and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all applicable LORS, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-3 The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS and the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the CBO. Once approved, the project owner shall inform the CPM and CBO of any anticipated changes to the design, and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change, to the CPM and CBO for review and approval.

a) The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95, CPUC General Order 128, or National Electric Safety Code (NESC); Title 8 of the California Code of Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC) and related industry standards.

b) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

d) The project conductors shall be sized to accommodate the full output of the project.

e) Termination facilities shall comply with applicable SCE interconnection standards.

f) The project owner shall provide to the CPM:

   i) Special Protection System (SPS) sequencing and timing if applicable,

   ii) A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable,

   iii) A copy of the executed LGIA signed by the California ISO and the project owner and approved by the Federal Energy Regulatory Commission.

Verification: Prior to the start of construction or start of modification of transmission facilities, the project owner shall submit to the CBO for approval:

a) Design drawings, specifications, and calculations conforming with CPUC General Order 95, General Order 128 or the 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, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment;

b) For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions,"[4] 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, General Order 128 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards;

c) Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements **TSE-3** a) through f);

d) Special Protection System (SPS) sequencing and timing, if applicable, shall be provided concurrently to the CPM.

e) A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable,

f) A copy of the executed LGIA signed by the California ISO and the project owner and approved by the Federal Energy Regulatory Commission.

Prior to the start of construction or modification of transmission facilities, the project owner shall inform the CBO and the CPM of any anticipated changes to the design that are different from the design previously submitted and approved and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change, to the CPM and CBO for review and approval.

TSE-4 The project owner shall provide the following notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and

2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

[4] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

Verification: The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-5 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95, GO 128 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

a) "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95, GO 128 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", and applicable interconnection standards, NEC, related industry standards.

b) An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".

c) A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

REFERENCES

California ISO (California Independent System Operator) 1998a – California ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.

California ISO (California Independent System Operator) 1998b – California ISO Dispatch Protocol posted April 1998.

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California Public Utilities Commission (CPUC) General Order 95 (GO-95), Rules for Overhead Electric Line Construction, revised January 12, 2012 by Decision No. 12-01-032.

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CH2M2017g – CH2M Hill (TN216318). **Appendix A - Q1334 CAISO Queue Cluster 9 Phase I Report.** February 10, 2017

CH2M2017h – CH2M Hill (TN216319). **Attachment 3, Appendix A - Q1334 CAISO Queue Cluster 9 Phase I Report.** February 17, 2017

NERC (North American Electric Reliability Council). 2006. Reliability Standards for the Bulk Electric Systems of North America, May 2006.

WECC (Western Electricity Coordinating Council) 2006 – NERC/WECC Planning Standards, August 2006.

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.

WASTE MANAGEMENT

Obed Odoemelam, Ph.D

SUMMARY OF CONCLUSIONS

This staff analysis assesses potential issues associated with handling and disposal of the wastes generated from construction and operation of the proposed Mission Rock Energy Center (Mission Rock or project) and evaluates the adequacy of the applicant's plan for handling these wastes without significant impacts on human health and environment. These wastes may be hazardous or nonhazardous depending on how generated and are required to be managed in compliance with specific health and safety laws, ordinances, regulations, and standards (LORS), which staff has noted in this analysis. The applicant also discussed these LORS and proposes a waste management plan to ensure compliance.

Mission Rock would be located on a 9.79-acre site which is a site of past industrial activity presently paved over with asphalt concrete. There thus are no readily discernible signs of soil or subsurface water contamination. The applicant has identified the expected waste streams in the expected amounts and also discussed the adequacy of available disposal facilities. Staff has evaluated the applicant's management plan and considers it adequate for compliance and has proposed specific conditions of certification to ensure implementation.

INTRODUCTION

This Preliminary Staff Assessment (PSA) evaluates the proposed waste management plan and mitigation measures designed to reduce risks and environmental impacts associated with handling, storing, and disposing of project-related hazardous and nonhazardous wastes. The technical scope of this analysis encompasses wastes existing on site and those to be generated during demolition, construction, and facility operation. Management and discharge of wastewater is addressed in the **Soil and Water Resources** section of this staff assessment. Additional information on waste management is provided in the **Worker Safety & Fire Protection** and **Hazardous Materials Management** sections.

Energy Commission staff's objectives in conducting this waste management analysis are to specifically ensure that:

- Management of Mission Rock's wastes would be in compliance with all applicable LORS. Compliance with such LORS is required to ensure that wastes generated during construction and operation of the proposed project would be managed in an environmentally sound manner;
- Disposal of project wastes would not significantly affect the existing waste disposal activities or the environment; and that
- Upon project completion, the site would be managed to ensure that project wastes and waste constituents would not pose a significant risk to humans or the environment.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Waste Management Table 1 shows the federal, state, and local environmental laws, ordinances, regulations, and standards (LORS) that 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 environmental acceptability of Mission Rock as a potential waste generator.

Waste Management Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description	Discussion/ Conclusions
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 ten regional offices. The Pacific Southwest regional office (Region IX) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.	**Compliant.** The applicant proposes to recycle and/or dispose of hazardous and nonhazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the applicant intends to obtain a hazardous waste generator identification number from the U.S. EPA. The project owner also intends to properly store, package, and label all hazardous waste; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately trained employees in accordance with state and federal hazardous waste management requirements. **WASTE-1**, **-4**, and **-8** would ensure implementation of the Title 42 requirements.

Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes	These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. Part 246 addresses source separation for materials recovery guidelines. Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. Part 258 addresses the criteria for municipal solid waste landfills. Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is an authorized state so the regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.	**Compliant.** The applicant intends to properly classify all waste streams to ensure appropriate handling and disposal. **WASTE-4** and **-8** (which require the project owner to prepare Construction Waste Management and Operation Waste Management Plans), would ensure implementation of the requirements of the Code
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.	**Compliant. WASTE-6, -4** and -**8** require the project owner to comply with these regulations.
Interim Final Rule 29 CFR Part 1926.62	Provides uniform inspection and compliance guidance for Lead Exposure in Construction.	**Compliant.** The applicant intends to prevent worker exposure to lead-based paint if encountered during demolition.
29 CFR 1926.1101	Regulates asbestos exposure in workplace for abatement workers and contractors.	**Compliant**. The applicant intends to provide their asbestos abatement plan to the SCAQMD for review (to ensure protection of on-site workers and contractors) in the demolition phase. **WASTE-5** would ensure implementation

		of the required preventive measures.
National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61	An asbestos standard that protects the general public from asbestos exposure due to demolition or demolition activities.	**Compliant. WASTE-5** would also ensure against public exposure to ACM by ensuring handling as a hazardous material.
29 CFR 1926.1101	Regulates asbestos exposure in the workplace for abatement workers and contractors.	**Compliant**. Airborne asbestos would be monitored as necessary to ensure specifi mitigation and worker protection.
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.	**Compliant.** The project would be required to recycle and/or dispose hazardous and nonhazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes will be produced during both project construction and operation, the project will be required to obtain a hazardous waste generator identification number from the U.S. EPA. The project will 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. Conditions of Certification **WASTE-1, -2**, -**3, -5, -7** and -**9** 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. **WASTE-4** and **-8** require the project owner to prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of managed, recycled, and/or disposed of after generation
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	**Compliant.** Mission Rock would be required to recycle and/or dispose of hazardous and nonhazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes will be produced during both project construction and operation, there will be a requirement to obtain a hazardous waste generator identification number from U.S.EPA. The project owner will

	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 wastes 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.	also 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. Conditions of Certification **WASTE-1, -2, -3, -4, -5, -6, -7** and **-9** 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. **WASTE-4** and **-8** would require the project owner to prepare a Construction Waste Management and Operation Waste Management Plan detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation.
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 five environmental and emergency response programs listed below: 1. Aboveground Storage Tank Program Business Plan Program 2. California Accidental Release Prevention (CalARP) Program 3. Hazardous Material Management Plan / Hazardous Material Inventory Statement Program 4. Hazardous Waste Generator / Tiered Permitting Program 5. Underground Storage Tank Program The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as Certified Unified	**Compliant.** The project is required to recycle and/or dispose hazardous and nonhazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes will be produced during both project construction and operation, the project will be required to obtain a hazardous waste generator identification number from U.S. EPA. The project will 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. Conditions of Certification **WASTE-1**, **-2**, **-3**, **-5**, **6**, **-7** and **-9** would require the project owner to ensure that the project site is investigated and remediated as necessary; demonstrate that project

	Program Agencies (CUPAs). The County of Ventura Fire Department Health Hazardous Materials Division and the Oxnard Fire Department are the area CUPA. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the **Hazardous Materials Management** and/or **Worker Safety & Fire Protection** sections.	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. (Ex. 2000, p. 4.13-23.) Conditions of Certification **WASTE-4** and **-8** would require the project owner to prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation.
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 include specific reporting requirements for businesses. Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). Article 10 – Business Reporting to CUPAs (§§ 15600–15620).	**Compliant.** **WASTE-1** will ensure the Applicant provides relevant information to the CUPA, and where necessary, require completion of Phase II investigations to evaluate the extent of contamination and identify the necessary remedial actions. If a site is considered contaminated, a Phase II environmental site assessment may be conducted (ASTM test E1903), with a more detailed investigation involving chemical analysis for hazardous substances and/or petroleum hydrocarbons performed. The Applicant will also be required to coordinate with the appropriate regulatory authority that will otherwise regulate the activity if not for the in-lieu authority of the Energy Commission. The condition will then require monitoring and reporting on the progress of remediation of the various areas of contamination located on the project site.
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.	**Compliant.** Conditions of Certification **WASTE-4** and **-8** require the project owner to prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation
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	**Compliant.** With implementation of **WASTE-1** through **9**, the project would comply with all applicable LORS regulating the management of hazardous and nonhazardous wastes during both facility construction and operation. The Applicant is required to

	generators subject to the act.	recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes will be produced during both project construction and operation, the project will be required to obtain a hazardous waste generator identification number from the U.S. EPA. The project will 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
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).	**Compliant.** Condition of Certification **WASTE-5** requires that the project owner submit the SCAQMD's Asbestos Notification Form to the CPM and Ventura County Air Pollution Control District for review prior to removal and disposal of asbestos. All friable asbestos (Class I) collected during demolition activities will be disposed of as hazardous waste.
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.	**Compliant.** The project would be required to recycle and/or dispose hazardous and nonhazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes will be produced during both project construction and operation, the project will be required to obtain a hazardous waste generator identification number from U.S. EPA. It will 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. **WASTE-1, -2, -3, -4, -5, -7** and **-9** 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. **WASTE-4** and **-8** require the project owner to prepare Construction Waste Management and Operation Waste Management Plans detailing the types

		and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation
Local		
Ventura County Ordinance Code: Construction and Demolition Waste Management, (Ordinance No. 4421.) Ventura County's Hazardous Materials Program Requirements.	Provides guidance for local management of solid waste and hazardous household waste. Incorporates the County's Source Reduction and Recycling Elements which specify means of reducing commercial and which specify the means of reducing commercial and industrial sources of solid waste. Waste will be recycled in a manner consistent with applicable LORS. A Construction and Demolition (C&D) Waste Management Plan must be submitted and approved prior to issuance of a building permit. Ventura County's Health Division's Hazardous Materials Program is CUPA for Ventura County that regulates and conducts inspections of businesses that handle hazardous materials and/or have underground tanks. Specifies requirements regarding storage and handling of hazardous materials and wastes.	**Compliant.** As required, the project will recycle and/or dispose of hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Compliance would be through Conditions of Certification **WASTE-1**, **-2**, **-3**, **-4**, **-5**, **-7** and -**9** which **r**equire the project owner to ensure that the project site is investigated and remediated as necessary; demonstrate that project wastes are managed properly; and ensure clean of future spills or releases of hazardous substances or wastes. properly reported, cleaned-up, and remediated as necessary

SETTING

PROJECT AND SITE DESCRIPTION

Mission Rock is proposed as a natural gas-fired, simple-cycle combustion turbine power plant rated at a nominal generating capability of 275 megawatts (MW). It would be co-located with battery unit arrays for storage that could provide 25 MW of electricity for 4 hours. The proposed site is designated as Assessor's Parcel Number (APN) 090-0-165, and is a 9.79-acre parcel located in an industrial park at 1025 Mission Rock Road in unincorporated Ventura County near Santa Paula, California.

The site is currently developed as an asphalt concrete-paved recreational vehicle and boat storage yard owned and operated by Minn-Cal Enterprises. Within it are a 4,800 square-foot (SF) shop and storage building, one 1,800-SF office building, and a 6,000-gallon wastewater holding tank. Adjacent land uses include the Granite Construction Company's asphalt recycling plant to the north, an automobile dismantling and salvage facility, an oil field operations support yard to the north, and a citrus orchard and row crops field to the east and west. The Ventura County Todd Road Jail facility is located to the southwest (CAL 2015b, Appendix 5.14A, and page 8). There is more information on the area's land use in the **Project Description** section of this staff assessment.

The most important of issues from Mission Rock's waste management would relate to the following:

- Handling of wastes from construction of five new GE Energy power block - LM6000 PG combustion turbine generators (or equivalent) equipped with selective catalytic reduction (SCR) system for exhaust emission control ;
- Handling of wastes from operation of the project's proposed Lithium-ion batteries system;
- Handling of wastes from construction of the interconnecting 6.6-mile 230-kV line between Mission Rock and Southern California Edison's (SCE) Santa Clara Substation to the west;
- Handling of wastes associated with construction of the natural gas pipeline connecting Mission Rock via a new 16-inch diameter pipe running southwest from Southern California Gas Company's existing high-pressure natural gas transmission pipeline;
- Handling of wastes from construction of a new 1.7-mile-long pipeline that would convey treated recycled water to Mission Rock from the Limoneira Company water treatment facility disbursement point;
- Handling of wastes from use of industrial wastewater from a water treatment system with a filter purification system handling wastes from Mission Rock's cooling tower whose blowdown would be discharged through Patriot Environmental Solutions, Inc. into an existing pipeline on Shell Road, adjacent to the Mission Rock site; and
- Handling of wastes from temporary construction facilities which would include a 2.89-acre worker parking and laydown area immediately north of the Mission Rock site (CAL 2015a, page 1-2).

Preparation of the proposed Mission Rock site and demolition of existing buildings and structures would produce a variety of wastes which the applicant has listed regarding classification, expected amounts, and applicable disposal methods (CAL 2015a Table 5.14-1). These wastes would include wood and metal pieces, concrete, asphalt, empty containers, asbestos debris, heavy metal dust, universal wastes, batteries, waste oil filters, and solvents and containers. Some would be recycled where practical while the non-recyclables would be deposited in Class I or Class III landfills. Operation and maintenance of Mission Rock and associated facilities would generate a variety of nonhazardous and hazardous wastes. To control air emissions, the project's turbine units would use selective catalytic reduction and oxidation catalyst systems which generate both solid and hazardous waste which would be returned to the manufacturer for recycling, if possible, or disposed of in a Class I landfill (CAL2015a, p 5.14-10). Such waste-generating replacement of SCR units occurs only once about every 15 years (CAL2015d, p 53).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This section addresses the following issues about Mission Rock: (1) existing site conditions and the potential for contamination associated with prior industrial activities on or near the site and (2) impacts on area disposal activities from generation and management of wastes during project construction and operation.

For any site in California proposed for the construction of a power plant or a similar facility, the applicant is required to provide documentation of the nature of any existing or future releases of hazardous substances from construction or operations. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination would be influenced by site-specific factors including, but not limited to, the concentration of contaminant in question; the proposed use of the contaminated area and any potential pathways for worker and general public exposure. Any immitigable releases of hazardous substances that pose a risk to human health or the environment would be considered significant by the 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 and submitted as part of an application for certification (AFC). The Phase I ESA is conducted to identify any conditions suggestive of releases and threatened releases of hazardous substances at the site and to identify any location known to be contaminated (or to be a source of contamination) near the site. Such a location is known as a Recognized Environmental Condition or REC.

In general, the Phase I ESA survey is conducted by a qualified Environmental Professional (EP) to inquire about past uses and ownership of the property, research any history of hazardous substance releases or hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination. After conducting all necessary file reviews, interviews, and site observations, the EP would provide his findings about the environmental conditions at the site. Since the Phase I ESA does not involve any physical sampling or testing, the EP may render an opinion about the necessity for additional investigations. Additional investigations may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or it is necessary to confirm a specific sign of REC.

Whenever additional investigations are needed to identify the extent of possible contamination, a Phase II ESA might 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.

In assessing the environmental suitability of a proposed project, the Energy Commission staff usually reviews the Phase I ESA and works with the appropriate oversight agencies as necessary to determine if additional site characterization work would be needed and if any mitigation would be necessary to protect the environment.

With regard to Mission Rock, staff reviewed the applicant's proposed solid and hazardous waste management methods (CAL 2015a, pages 5.14-9 and 5.14-10) for compliance with the LORS identified for waste disposal and recycling. These federal, state, and local LORS represent a comprehensive regulatory system to protect human health and the environment from impacts associated with management of both hazardous and nonhazardous wastes. Staff considers a project's compliance with LORS as sufficient showing of the potential for managing the wastes without significant impacts on human health or environment.

While a facility's wastes are required to be classified to identify the applicable handling methods, it is also important to ensure the adequacy of the disposal space available for the facility. Staff reviewed the information on the ability of the area's disposal facilities to accommodate the wastes from Mission Rock. As with similar facilities, such information allows staff to determine whether or not the proposed project's wastes would significantly impact the remaining disposal space. Staff's threshold value of significance in this regard is 10 percent of remaining disposal space.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Conditions and Possible Contamination

An environmental site assessment is most often prepared for a real estate holding focusing on identifying potential or existing environmental contaminant or liabilities. Staff uses this report to identify whether there are any site conditions that may pose a hazard to the environment, construction workers, or the general public, and evaluates whether any mitigation would be necessary.

The most recent Phase I ESA for the Mission Rock site was conducted on September 4, 2015, by Padre Associates Incorporated in accordance with the American Society for Testing and Materials Standard Practice E 1527-13 for ESAs. The applicant included this Phase I ESA update as an Appendix to their Application for Certification (CAL 2015a, Appendix 5.14). As discussed by the applicant, the objective of the ESA was to determine whether current or previous land uses at or adjacent to the Mission Rock site may have involved or resulted in the use, storage, disposal, treatment and/or release of hazardous substances into the environment resulting in the presence of RECs at the site. The ESA did not include a survey of asbestos-containing materials (ACMs) or lead-based paint (LBP) nor did it include any sampling of the air or soil. The survey involved the following main tasks:

- Review of readily available geologic and hydrogeological literature;
- Historical search including a review of historical area photographs, Sanborn Fire Insurance Maps, historical city directories, and historical topographic maps relating to the project site;
- A reconnaissance of the project site and properties;
- Interviews with individuals with historical knowledge of the project site; and
- Public agency records review.

As reported by the applicant, Mission Rock's Phase I ESA did not identify any signs of RECs which would have necessitated a follow-up Phase II ESA. Staff agrees with the applicant that the lack of RECs from this Phase I ESA made it unnecessary to conduct a follow-up Phase II ESA before the type of development being proposed for the site. In further assessing the need for further investigations, staff noted the applicant's report that petroleum hydrocarbon-stained surface soils had been excavated and remediated at the site between July 1991 and November 14, 1991 followed by the resurfacing with asphalt concrete (CAL 2015b p 5.14-1). This suggests a lack of contamination but given the noted history of the site as a place of past industrial activity, staff is unable to rule out any contaminant discovery from future site grading activities.

To ensure that the applicant would have procedures in place to properly handle any contaminated soil, staff recommends condition of certification (**WASTE-1**) requiring the project owner to prepare (and submit to the CEC compliance project manager for review and approval) a Soil Management Plan (SMP) before the start of any soil-disturbing activities. The SMP shall be prepared by a California Registered Geologist or Civil Engineer with experience in hazardous waste management. It should be used for proper identification, handling, on-site management, and disposal of the impacted soil. The specific objective of the SMP would be to describe the procedure to be followed during soil disturbances to ensure worker protection from toxicant exposure. The scope of the SMP would be limited to activities involving excavation, contaminant characterization, and reuse and/or disposal of contaminated soil. The typical SMP would include engineering controls, Health and Safety Plans, earthwork schedules, and a list of responsible staff.

Staff's recommends **WASTE-2** to ensure that an experienced and qualified engineer or professional geologist would be available for consultation if contamination is discovered. **WASTE-3** would require the professional engineer or geologist to inspect the site, determine what would be required to characterize the nature and extent of contamination, and provide a report to the CPM on findings and recommended action. The resume of the engineer or geologist shall reflect experience in remedial investigations and feasibility studies. Related activities would specifically include soil removal, dust suppression, and worker exposure prevention from wearing of personal protective equipment. The on-site consulting professional shall contact the CPM and representatives of the Department of Toxic Substances Control on the recommended course of action.

Demolition and Construction Impacts and Mitigation

Nonhazardous Wastes

Activities related to demolition, site preparation, and construction of Mission Rock and associated facilities would last approximately 23 months and generate both hazardous and nonhazardous wastes in solid and liquid forms. The applicant has listed the types of wastes expected from construction together with applicable disposal methods (CAL 2015a, pages 5.14-2, 5.14-3, and Table 5.14-1). Most of such wastes are the ordinary solid nonhazardous waste or garbage. No hazardous waste is expected from demolition activities (CAL2015d, p.53).

Before demolition and construction can begin, the project owner would be required to prepare a Ventura County Construction and Demolition (C&D) Debris Recycling Plan. The California Integrated Waste Management Act of 1989 (AB 939) is the law that requires local governments to ensure that solid wastes are diverted from landfills, reduced, reused, or recycled as practicable. Cal Recycle (formerly known as California Integrated Waste Management Board) has oversight of waste recycling, reduction, and product reuse in California. The 2008 California Green Building Standards Code requires all construction project proponents to develop a recycling plan to divert and or recycle at least 50 percent of wastes generated during construction. The minimum reduction level for Ventura County is 60 percent which could be achieved through implementation of staff's recommended **WASTE-4.**

The applicant estimates that about 771.4 cubic yards of nonhazardous wastes would be generated from Mission Rock construction along with 5.76 cubic yards of demolition waste (CAL 2015d, p 53). Demolition and construction wastes would consist of wood, glass, metal, plastics, concrete, asphalt, oil-absorbent mats, and oily rags. The Construction and Demolition Debris Reuse and Recycling Plan requires the applicant to identify the type, volume, and waste disposal methods to be used during construction of the facility. The project owner intends to comply with the required diversion level for Ventura County of 60 percent of the waste (CAL 2015a, p 5.14-9 and 5.14-13). According to the applicant, the project's nonhazardous wastes would be recycled to the extent practical with the non-recyclables collected by a licensed hauler and disposed of in a solid waste facility in accordance with Title 14, California Code of Regulations, and Section 17200 et seq.

Implementing staff's recommended **WASTE-4** would facilitate proper management of project demolition and construction wastes since Ventura County maintains a project demolition and construction wastes program. **WASTE-4** would require the project owner to submit copies of the related paperwork to the Ventura County Integrated Waste Management Division and the CPM for review and approval.

Liquid nonhazardous wastes would also be generated during construction. These would include sanitary wastes, dust suppression, water and storm water, and equipment-wash water. The applicant intends to ensure that sanitary wastes would be collected in portable, self-contained toilets and pumped into a holding tank for periodical disposal at an appropriate, licensed facility. Contaminated equipment wash or test water would be stored in a designated area, tested to determine if it is hazardous, and either discharged into the storm water retention basin or transported to an appropriate treatment/disposal facility. More information on management of the project's wastewater can be found in the **Soil and Water Resources** section of this staff assessment.

Hazardous Wastes

The hazardous solid wastes generated from Mission Rock construction could include asbestos waste, used oils, electrical equipment, lead-acid storage batteries and universal wastes. Although the applicant's Phase I ESA did not include an assessment of asbestos, staff believes that the recommended asbestos-specific **WASTE-5** would be adequate for any abatement at any of the existing on-site buildings or structures if encountered. The applicable mitigation requirements are from the Ventura County Air Pollution Control District (APCD) which requires the owner of a demolition or renovation project to submit an APCD Notification of Demolition or Renovation Form for approval before any asbestos stripping or removal work begins.

Mission Rock would be classified as a hazardous waste generator and therefore have to obtain a site-specific EPA identification number that would be used to manifest hazardous wastes from the facility before off-site disposal, treatment or recycling (CAL 2015a, p 5.14-10). Such waste would be stored on site for less than 90 days and transported by licensed hazardous waste hauler companies. Staff recommends **WASTE-6** to ensure that the project's EPA identification number is reported to the CPM before the start of demolition or construction. Staff reviewed the details of the applicant's intended waste minimization and disposal methods (CAL 2015a, pp 5.14-9 and 5.14-10) and concluded that implementation would be adequate to allow all wastes

to be disposed of in accordance with applicable LORS. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by **WASTE-7** to notify the CPM whenever he becomes aware of any such action.

Operations Impacts and Mitigation

Both hazardous and nonhazardous wastes are expected from operation of Mission Rock; 180 cubic yards of nonhazardous wastes would be generated per year together with 5 cubic yards of hazardous wastes (CAL 2015d, Responses to Staff's Data Requests Nos. 106 and 107). Wastes would include routine materials consisting of used air filters, spent deionization resins, used air pollution control equipment as well as domestic and office wastes such as office paper, aluminum cans, plastic, and glass pieces (CAL 2015a, Table 5.14-2). All components would be recycled to the extent possible and non-recyclable wastes regularly transported off site to a local solid waste disposal facility. Nonhazardous liquid wastes would also be generated during facility operations and are discussed in the **Soil and Water Resources** section. To ensure implementation of the applicable LORS, staff recommends **WASTE-8** requiring preparation of an Operations Waste Management Plan to be submitted to the CPM for review and approval.

To ensure proper cleanup and management of any spills of hazardous substances, staff proposes **WASTE-9** requiring the project owner to report any clean up and rapidly remediate any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous spill management, reporting, containment, and control is provided in the **Hazardous Materials Management** section of this staff assessment.

Impact on Existing Waste Disposal Facilities

The hazardous and nonhazardous wastes from Mission Rock construction and operation would add to the total of wastes generated per year in Ventura County, California.

Impacts of Nonhazardous Wastes

As previously noted, the applicant estimates that approximately 771.4 cubic yards of solid, nonhazardous wastes would be generated during Mission Rock construction. Such nonhazardous wastes would be disposed of in California Class III landfills. **Waste Management Table 2** is a listing of Class III landfills in the vicinity of Mission Rock together with the Class I landfills available in California. (CAL 2015a page 5.14-7).

Waste Management Table 2
Recycling/Disposal Facilities

Landfill	Location (City)	Remaining Capacity (Cubic yards)	Estimated Closure Date
Class III –Nonhazardous			
Toland Landfill	Santa Paula, CA	21.983 million[1]	2027
Simi Valley Landfill and Recycling Center	Glendale, CA	119.6 million[1]	2052
Chemical Waste Management-Kettleman (Class III)	Kettleman, CA	17.469 million	2044
Class I -Hazardous Waste			
Clean Harbors Buttonwillow (Class I)	Kern, CA	13.350 million	2040
Waste Management Kettleman Hills (Class I) Phase 3	Kings, CA	5 million	2044

Source: CAL 2015a pages 5.14-7 and 5.14-8 and Table 5.14-3

The remaining capacity for the three available Class III landfill facilities is approximately 159 million cubic yards. The total amount of nonhazardous waste generated from project-related demolition, construction, and operation would thus contribute significantly less than 1 percent of the available Ventura County landfill capacity (CAL 2015a, page 5.14-8) meaning that disposal of the solid wastes generated by the Mission Rock project would occur without significant impacts on the capacity or remaining lives of any of these facilities.

Impacts of Hazardous Wastes

Hazardous wastes generated during demolition, construction, and operation would be recycled to the extent practicable (CAL 2015a, p. 5.14-9 and 5.14-10). Any wastes that cannot be recycled would be transported off site to a permitted Class I landfill. There are 156 facilities in California that could accept the types of hazardous wastes originating from Mission Rock and similar facilities (CAL 2015a, p 5.14-7). These wastes could be accepted for treatment, recycling, or disposal. Based on findings on previous licensed projects, Mission Rock could be seen as producing as much as 6.75 tons (45 cubic yards) of hazardous waste during construction and one ton per year (6.7 cubic yards per year) during operation. The Clean Harbors Buttonwillow Landfill in Kern County for example, has 13.35 million cubic yards of remaining hazardous waste disposal capacity (See **Waste Management Table 2** above).

Given the availability of recycling facilities for hazardous wastes such as used oil and solvents, together with the large amount of disposal space available at California's Class I disposal facilities, staff concludes that the volume of hazardous waste from Mission Rock requiring off-site disposal would be minor and would therefore not significantly impact the capacity or remaining operational ability of the Class I waste facilities.

CUMULATIVE IMPACTS AND MITIGATION

The California Environmental Quality Act (CEQA) Guidelines (Section 15355) define cumulative effects as “Two or more individual effects which, when considered together,

are considerable or which compound or increase other environmental impacts." Long-term impacts of cumulative significance are not anticipated with the construction and operation of Mission Rock and the other area facilities given that each project proponent is required to comply with CEQA requirements for evaluating potential cumulative impacts, and/or obtain approval from the county prior to permitting and construction by demonstrating conformance to existing Cal Recycle (Title 24) waste reduction requirements.

As proposed, Mission Rock's operational nonhazardous waste of potential cumulative significance would be 180 cubic yards (CAL 2015c, p. 53). The total solid waste disposal in Ventura County in 2013 was 4,755,333 cubic yards (CAL 2015a, p 5.14-8) showing that Mission Rock's impacts on long-term disposal space availability would be insignificant.

ENVIRONMENTAL JUSTICE

Environmental Justice Figure 1 in the **Environmental Justice** section shows the presence of an Environmental Justice (EJ) population within a six-mile radius of the project site based on race and ethnicity. **Environmental Justice Figure 2** and **Table 3** show that the below-poverty-level population in Santa Paula Census County Division and population in the Rio Elementary School District and Somis Union School Districts receive free or reduced-price meals and so constitute an EJ population based on income. The presence of an EJ population alerted staff to the potential for disproportionate waste management impacts from Mission Rock's construction and operation. There additionally are approximately 51 agricultural jobs/farm workers within a one-mile radius of the project site, as close as approximately 100 feet west of the site. There also are approximately 4,398 agricultural jobs/farm workers within a six-mile radius of the project site primarily to the northeast and south. There are by comparison, 25,877 agricultural jobs/farm workers in all of Ventura County (US Census 2014). The waste management impacts of specific focus for these EJ populations are only those from on-site handling of the wastes. The case for disproportional impacts could not apply to these wastes at their presently proposed disposal sites away from the project site. To assess the potential for the EJ impacts of specific concern for this project, staff focused on the following aspects of the past and proposed waste management practices at the site:

Past Clean-Ups

- As discussed earlier, past contamination at the project site was remediated in 1991 after which the site was paved over. There have been no discernible signs of new or old contamination at the site. In addition, staff has recommended specific conditions of certification requiring additional cleanup of contaminated soils if encountered during demolition, clearance and construction activities.

Status as a Waste Generating Facility

- As previously noted, Mission Rock would be categorized as a licensed hazardous waste generator and would thus be required to comply with LORS that would ensure safe storage, transportation, and disposal of hazardous wastes. Staff has included conditions of certification requiring development and implementation of

plans that would ensure proper disposal of hazardous waste at appropriately licensed facilities.

Proposed Handling of Nonhazardous Solid Waste

- Solid waste from demolition, clearance, and construction would be segregated, where practical for recycling, and disposed of in a facility with adequate capacity for disposal of nonhazardous wastes. Staff has included specific conditions of certification requiring development and implementation of plans for proper disposal of nonhazardous waste at appropriately licensed facilities. The project owner would use solid wastes sites or facilities verified to be in compliance with current LORS. In addition, there would be no increase of nonhazardous waste generators and facilities in the area from Mission Rock-related demolition, construction, or operations activities given the adequacy of disposal spaces.

Staff concludes from the foregoing that management of the waste generated during demolition, site clearance, construction and operation of the Mission Rock project would not result in any significant adverse impacts on the general public or EJ population represented in **Environmental Justice Figures 1** and **2** and **Table 3**. Additionally, impacts on the EJ population from management of the waste generated by the project would not be disproportionate.

COMPLIANCE WITH LORS

The Energy Commission staff concludes that the proposed Mission Rock would comply with all LORS regulating the management of hazardous and nonhazardous wastes during demolition of the existing on-site building and construction and operation of the facility itself. The applicant proposes to recycle and/or dispose of generated hazardous and nonhazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during Mission Rock construction and operation, the applicant proposes to obtain a hazardous waste generator identification number from U.S. EPA as required, and would properly store, package, and label all hazardous wastes, 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. A listing of the applicable LORS is provided in **Waste Management Table 1** along with the project's potential for compliance.

CONCLUSIONS

Consistent with the three main objectives of staff's waste management analysis (as noted in the **Introduction** subsection), staff reaches the conclusions discussed below:

- There are no readily discernible signs of chemical contamination at the proposed Mission Rock site. This is most likely due to the noted 1991 remediation of chemical contamination from past industrial activities and the resurfacing of the site with asphalt and concrete. Use of staff's recommended Soil Management Plan should ensure that the any discovered soil contamination would be remediated as necessary. Staff's recommended Conditions of Certification **WASTE-1**, **-2**, **-3**, **-5**, **-6**, **-7**, and **-9** would be adequate to ensure that the project site is investigated and

remediated as necessary in the case of discovered contamination or wastes generated during demolition, construction, and operations.

- After review of the applicant's proposed waste management procedures, staff concluded that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that demolition, construction, and operation wastes would be characterized and managed as either hazardous or nonhazardous waste. All nonhazardous wastes would be recycled to the extent feasible, and non-recyclables collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated on site for less than 90 days and then properly manifested, transported to, and disposed of at, a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. **WASTE-4** and **-8** would ensure construction and operation wastes would be managed in accordance with applicable LORS.
- With regard to the impacts of project wastes on existing waste disposal facilities, staff uses a waste volume threshold of 10 percent of a disposal facility's remaining capacity to determine if the impact from disposal of project's wastes at a particular facility would be significant. The available space within the three Class III landfills that may be used long term for Mission Rock's nonhazardous wastes is 159 million cubic yards. At 180 cubic yards per year this waste would occupy much less than 1 percent of the available space, meaning that the impacts of disposal within these available landfills would be less than significant.

  The two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of Mission Rock would have a combined remaining capacity of more than 15 million cubic yards. The hazardous wastes generated by Mission Rock would occupy less than 1 percent of the remaining permitted capacity. Therefore, impacts from disposal of Mission Rock's hazardous wastes would also have a less than significant impact on the remaining capacity at available Class I landfills.
- Staff concludes from the foregoing that management of the waste generated during demolition, site clearance, construction, and operation of the Mission Rock project would not result in any significant adverse impacts on the general public or EJ population represented in **Environmental Justice Figures 1** and **2** and **Table 3**. Additionally, impacts on the EJ population from management of the waste generated by the project would not be disproportionate.

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall prepare and submit to the compliance project manager (CPM) a Soils Management Plan (SMP) prior to any earthwork at the project site. The SMP shall be prepared by a California Registered Geologist or a California Registered Civil Engineer with experience in hazardous waste management. The SMP shall be updated as needed to reflect changes in laws, regulations, or site conditions. All earthwork at the site shall be conducted in accordance with the SMP. A SMP summary report, which includes all analytical data and other findings, shall be submitted once the earthwork has been completed. Topics covered by the SMP shall include, but not be limited to:

- Land use history including description and locations of any known contamination.
- The nature and extent of any previous investigations and remediation at the site.
- The nature and extent of any unremediated contamination at the proposed site.
- A listing and description of institutional controls such as the county's excavation ordinance and other local, state, and federal regulations and laws that would apply to the project.
- Names and positions of individuals involved with soils management and their specific roles.
- An earthwork schedule.
- A description of protocols for the investigation and evaluation of any previously unidentified contamination that may be encountered. The protocol shall be for temporary and permanent controls that may be required to reduce exposure to on-site workers, visitors, and the public.
- A site-specific Health and Safety Plan (HSP) to be implemented by all contractors at the site. The HSP should be prepared by a Certified Industrial Hygienist and would protect on-site workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction-related hazards. The HSP should address the possibility of encountering subsurface chemical contamination and include procedures to protect workers and the public.
- Hazardous waste determination and disposal procedures for known and previously unidentified contamination.
- Requirements for site-specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.
- Copies of relevant permits or closures from regulatory agencies.

Verification: At least 45 days prior to any earthwork, the project owner shall submit the SMP to the CPM for review and approval. A SMP summary shall be submitted to the CPM within 25 days of completion of any earthwork.

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), demolition, excavation, and grading activities, to the CPM for review and approval. The resume shall reflect experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

WASTE-3 If seemingly contaminated soil is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities (as evidenced by discoloration, odor, detection by handheld instruments, or other signs), the professional engineer or geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the professional engineer or professional geologist to the CPM within five days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-4 The project owner shall prepare a Construction and Demolition (C & D) Environmental Resources Management and Recycling Plan for demolition and construction wastes generated and shall submit a copy of the plan to the Ventura County Public Works Department for review, and to the CPM for review and approval. The plan shall include at a minimum, the following information:

- a description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications;
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste-testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- a method for collecting weigh tickets or other methods for verifying the volume of waste transported and the location of waste disposal; and,
- a method for reporting to demonstrate project compliance with construction waste diversion requirements of 60 percent pursuant to the

Cal Green Code and Ventura County's Construction & Demolition Ordinance.

Verification: The project owner shall submit the C & D Environmental Resources Management and Recycling Plan to Ventura County's Integrated Waste Management Division for review and to the CPM for review and approval, no less than 30 days prior to the initiation of demolition activities at the site.

The project owner shall also document in each monthly compliance report (MCR) the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Construction and Demolition Waste Management Plan; and update the Construction and Demolition Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-5 Prior to demolition of pipelines, buildings, and associated structures with asbestos-containing material (ACM), the project owner shall complete and submit a copy of a Ventura County Air Pollution Control District Notification of Demolition or Renovation Form to the APCD for review and to the CPM for approval. The project owner shall comply with all LORS to remove all ACM from the site prior to demolition.

Verification: No less than 60 days prior to commencement of structure demolition, the project owner shall provide the Notification of Demolition or Renovation Form to the CPM for review. The project owner shall inform the CPM, via the Monthly Compliance Report, of the date when all ACM is removed from the site.

WASTE-6 The project owner shall report new or temporary hazardous waste generator identification numbers from the United States Environmental Protection Agency prior to generating any hazardous waste during demolition, construction and operations.

Verification: The project owner shall keep a copy of the identification number(s) on file at the project site and 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-7 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 ten days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.

WASTE-8 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 include, 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, notifications of enforcement actions, and/or authorizations shall be included in the plan and updated as necessary;
- a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-9 The project owner shall ensure that all spills or releases of hazardous substances, materials, or waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to the CPM within 48 hours of the date the release was discovered.

REFERENCES

CAL2015a – Calpine Company (TN 207151-1) Application for Certification, Mission Rock Energy Center Vol I December 30, 2015.

CAL 2015b – Calpine Company (TN207160-1. Application for Certification Appendices, Mission Rock Energy Center Vol II. December 30, 2015.

CAL 2015c –Calpine Company Response to CEC Data Requests August 2015. Submitted to CEC/Docket Unit on August 17, 2015.

CAL2015d–Applicant's responses to CEC Data Requests, Set 2 (106 and 107). Latham & Wilkins LLP Submitted on November 13, 2015. CEC/Docket on November 13, 2015.

US Census 2014 – United States Census Bureau, OnTheMap Version 6.0, 2014, https://onthemap.ces.census.gov/.

WORKER SAFETY AND FIRE PROTECTION

Alvin J. Greenberg, Ph.D.

SUMMARY OF CONCLUSIONS

In this Preliminary Staff Assessment (PSA), Energy Commission staff (staff) concludes that the proposed Mission Rock Energy Center (Mission Rock or project) would incorporate sufficient measures to ensure adequate levels of industrial safety and fire protection and comply with applicable laws, ordinances, regulations, and standards (LORS). Staff recommends the project owner provide a Project Construction Safety and Health Program, 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 **-10**. The proposed conditions of certification require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable LORS.

The Ventura County Fire Department (VCFD; the fire authority) has stated that its ability to respond to emergency calls, including fire, rescue, hazardous materials spills/releases, and Emergency Medical Services, would not be significantly impacted by the construction and operation of the project (McNeil 2017a).

INTRODUCTION

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protective measures are employed to reduce or eliminate these hazards or to minimize the risk through engineering controls, administrative controls (such as procedural controls and special training), and/or personal protective equipment.

The purpose of this PSA is to assess the worker safety and fire protection measures proposed by the project owner (Mission Rock Energy Center, LLC, a wholly owned subsidiary of Calpine Corporation, the applicant) and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- ensure the safety of the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

There have been many verbal and written comments from members of the public, the City of Santa Paula, the Briggs School District, and the Ventura County Sheriff's Office concerning hazardous materials use at, and transportation to, this proposed power plant. Staff has noted that most of the questions concern the accidental release of toxic chemicals or fires at the power plant, traffic accidents on SR-126 and Briggs road during peak school bus and parent vehicular traffic, the risks to hazardous materials storage tanks at a power plant built in a flood zone, the hazards of the Li-ion batteries at the

power plant, and site security during both construction and commercial operation. Staff has attempted to address these concerns in this section of the PSA and in the **Hazardous Materials Management and Soil & Water Resources** sections.

Project Description

The applicant is proposing to construct, own, and operate a natural gas fired electrical generating plant in Ventura County, California, west of the city of Santa Paula near State Route (SR) 126. It would be located on a 9.79 acre parcel paved with asphalt and concrete and currently being used as a storage facility for recreational vehicles and boats at the end of Mission Rock Road.

As proposed, the facility would consist of five (5) simple-cycle combustion turbine generators (CTGs) rated at a nominal generating capacity of 275 megawatts (MW), co-located with battery units for the storage of electricity that can deliver an additional 25 MW/100MWh (25 MW for a period of four hours). The five CTGs would be equipped with selective catalytic reduction (SCR) air emissions control equipment and associated support equipment for nitrogen oxide (NOx) and an oxidation catalyst carbon monoxide (CO) and volatile organic gas (VOC) control. The 25 MW/100 MWh battery energy storage system would be installed at the proposed power plant site. The system can be operated in conjunction with the thermal power plant or separately. The batteries would be lithium-ion and/or flow types. The storage system would consist of three main components: batteries, inverters, and balance of plant (BOP) (i.e., step-up transformers, site controller). The batteries would be enclosed to minimize fire protection requirements and provide secondary containment for spills (see section on **Hazardous Materials Management** of this document for further discussion of the potential of other hazardous material accidental releases and mitigation measures proposed). The batteries would be stored in 20 onsite metal buildings that would be arranged along the south and western edges of the project footprint.

The CTGs would be designed to burn only natural gas. Natural gas would be delivered to Mission Rock via a tap off of the existing Southern California Gas Company (SoCalGas) natural gas Line 404 and 406 via an approximately 2.4-mile-long pipeline. Recycled water from the Limoneira Company would be used for service water, chiller fill and makeup, and for fire protection. Potable water would be used for safety showers, eye-wash stations, drinking water, and sanitary facilities.

Aqueous ammonia (19.5 percent ammonia in aqueous solution) would be used to control oxides of nitrogen (NOx) emissions from the combustion turbine by means of a process called selective catalytic reduction (CAL 2015a, page 5.5-8). The use of aqueous ammonia significantly reduces the risk that would otherwise be associated with the use of the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the anhydrous form, which is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high down-wind concentrations. Spills associated with the aqueous form are much easier to contain than those associated with anhydrous ammonia, and the slow mass transfer from the surface of the spilled material limits emissions from such spills.

Although no natural gas is stored on the site, the project would involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. Twenty Lithium ion batteries will also be placed on the site and pose a risk of fire and/or explosion. This document addresses all potential impacts associated with worker safety, the fire detection and suppression systems planned for this proposed power plant, and emergency response by the VCFD.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description	Mission Rock Consistency
Federal		
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).	**Consistent. WS-1 & 2** require that the project owner develop and implement occupational safety and health programs to prevent worker injuries during construction and operations. **WS-3 & 4** require the project owner to implement an additional layer of worker safety during construction.
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.	**Consistent. WS-1 & 2** require that the project owner develop and implement occupational safety and health programs to prevent worker injuries during construction and operations. **WS-3 & 4** require the project owner to implement an additional layer of worker safety during construction.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.	**Consistent.** Staff's assessment in the section on **Method and threshold for determining significance** recognizes that CalOSHA has jurisdiction in California.
State		
Title 8, California Code	These sections require that all employers follow	**Consistent.** Staff's

Applicable Law	Description	Mission Rock Consistency
of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	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.	assessment below recognizes and lists many of the most important CalOSHA worker safety and health programs, and **WS-1 & 2** impose specific conditions to ensure compliance with Title 8.
Local (or locally enforced)		
Ventura County Ordinance #30 adopted Oct. 2016	The Ventura County Fire Department currently enforces the 2016 version of the California Fire Code.	**Consistent.** See discussion below under Fire Authority
Ventura County Air Pollution Control District (VCAPCD) Rule 55 (adopted June 2008)	Regulates the emissions of fugitive dust from such sources as agriculture, mining and construction activity and serves to help reduce spores of the fungus *Coccidioides immitis* into the air during soil disturbance	**Consistent. WS-9 & 10** require extra measures to control dust generation and migration off the site, as well as the reporting of medically confirmed cases of Valley Fever.
Ventura County Ordinance #4456 adopted Jan. 2017	Adopted the 2016 Ventura County Building Code which includes by reference parts of the current California Building Code (Title 24) and establishes, in part, codes for seismic design criteria.	**Consistent.** See discussion below under Fire Authority.
National Fire Protection Association (NFPA) 850	This industry standard of the National Fire Protection Association (NFPA) addresses fire protection at electrical generating stations.	**Consistent. WS-7** requires adherence to this NFPA industry standard.

SETTING

THE FIRE AUTHORITY

The proposed facility would be located just west of the Santa Paula city limits in an unincorporated industrial area of Ventura County between SR-126 and the Santa Clara River. This area, known as the Mission Rock area, is within the jurisdiction of the Ventura County Fire Department (VCFD). The plan for the annexation of the nearby city of Santa Paula Fire Department by the VCFD has changed the matter of response times, staffing levels, engines/trucks available, and first response issues since the AFC was submitted.

At the time of the AFC preparation and submittal at the end of 2015 and when staff first discussed this proposed power plant in October 2016 with the VCFD and the Santa Paula Fire Department (SPFD), automatic mutual aid provided to this area by the Santa Paula Fire Department (SPFD) meant that the SPFD would be “first-in” to address an emergency at the proposed location of the power plant. SPFD station 82 has been the first responder to this area. A notable and tragic example of this was the explosion and fires in November 2014 at the Santa Clara Wastewater Treatment Plant where the first responders came from SPFD Station 82 followed by response from VCFD station 26.

The SPFD experienced a fire fighter fatality, another was seriously injured, and a fire engine destroyed. Should annexation of the SPFD by the VCFD go forward, it would take place by the fall of 2017, SPFD station 82 would become a VCFD station, and existing VCFD station 26 would be closed (CEC 2017b). Current VCFD Station 26 is located at 12391 W Telegraph Rd, Santa Paula, is staffed part-time, and is currently the station nearest the proposed power plant site. Current SPFD Station 82 is located at 536 W Main St, Santa Paula and although is slightly further from the proposed power plant site than VCFD Station 26, the response time is quicker due to a more direct drive route and because it is staffed 24/7. The response time would still be within the 5 minute desired window.

SPFD Chief Richard Araiza and Assistant Chief Mike Plant gave an update and budget figures to the Santa Paula City Council on February 21, 2017 (CEC 2017b). Interim Chief Plant gave an additional update to the City Council on April 17, 2017 and May 1, 2017. They informed the City Council that annexation would save the city considerable funds and result in better coverage and updated fire response equipment and facilities. The firefighters' union of both fire departments supports this annexation. Application for the annexation and a Fire Service Plan must be prepared and submitted to the Local Agency Formation Commission (LAFCO) for approval. The Application is currently being written and the Fire Service Plan will be completed within a few weeks of the Santa Paula City Council approving the annexation. Interim Chief Plant further indicated on April 17 that VCFD is in a better position to re-commission an aerial equipped apparatus ("ladder truck") that had once provided service to the city. On May 1, the City Council adopted a "Resolution of application" to support the initiation of proceedings with the Ventura County Local Agency Formation Commission (LAFCO) for annexation of Fire Protection Services into the Ventura County Fire Protection District.

In general, the VCFD has a total of thirty-two fire stations in the county, however, owing to a central dispatch agreement; the VCFD has the ability to dispatch emergency response teams from any fire department located within the county (McNeil 2017a). This greatly adds to the flexibility and response for providing emergency services within Ventura County and greatly diminishes the possibility of "drawdown" of resources. In conversations with Battalion Chief John McNeil (McNeil 2017a and b), the VCFD believes it is capable to respond adequately to any fire, rescue, hazardous materials spill, or emergency medical services call at the project site. As discussed above, the first responders to a fire, rescue, or hazardous materials incident after annexation would be from the former SPFD Station #82. Station 82 does not have a ladder truck, and thus if needed for high angle rescue or firefighting, a ladder truck would be dispatched from either a VCFD station, a Ventura City Fire Department Station, or from the city of Fillmore Volunteer Fire Department, all of which are equipped with ladder trucks. The response time for a ladder truck to arrive at the project site would be 8-15 minutes, depending upon which station provided the truck. All routes to the site would be via SR-126 and the small access roads. Also if needed, a full hazardous material response would be provided by the VCFD Hazardous Materials Response Team (VCFD-HMRT) located at VCFD Station #7, located at 3300 Turnout Park Circle, Oxnard, approximately 9.3 miles away. The VCFD-HMRT is capable of handling any hazardous materials-related incident at the proposed facility and would have a response time of around 10 – 12 minutes.

The Ventura County Fire Department currently enforces the 2016 version of the California Fire Code and along with other county departments, enforces the 2016 Ventura County Building Code which includes by reference parts of the current 2016 California Building Code (Title 24) and establishes, in part, codes for seismic design criteria.

POTENTIAL SITE CONTAMINATION

In addition to construction and operations worker safety and fire issues, the potential exists for exposure to contaminated soil during site preparation. A Phase I Environmental Site Assessment conducted for this site in 2015 concluded that "*…the Project Site was historically utilized as an automobile salvage yard, which is a potential recognized environmental condition (REC). However, based on the fact that petroleum hydrocarbon-stained surface soils were reportedly excavated and remediated at the Project Site in 1991, and that the parcel has almost entirely been resurfaced with asphalt-concrete and concrete, no additional action or assessment is recommended regarding the historical use of the Project Site*." Furthermore, *a*ccording to the Phase I ESA, "*potential human health risks are likely to be minimal when considering the future intended use of the project site for industrial purposes. The proposed MREC property parcel requires no further investigation before redevelopment*."(CAL 2015a, Section 5.14.1.1 and Appendix 5.14A). To address the possibility that soil contamination would be encountered during construction of Mission Rock, proposed Conditions of Certification **WASTE-3** and **WASTE-4** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. If any contaminated soil were identified, proper personal protective equipment (PPE) would be provided as needed. See the staff assessment section on **Waste Management** for a more detailed analysis of this topic.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Two issues are assessed in **Worker Safety and Fire Protection:**

1. The potential for impacts on the safety of workers during site preparation, construction, commissioning, and operations activities.

2. Availability of, and potential impacts on, fire prevention/protection, emergency medical response, and hazardous materials spill response services during site preparation, construction, commissioning, and operations of the facility.

Worker safety issues are thoroughly addressed by Cal/OSHA regulations. If all LORS were followed, workers would 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 requirements. Staff may also identify unique significant worker safety and health risks not addressed by current Cal/OSHA regulations and propose conditions of certification to mitigate those risks. A past example of this was the need for the Energy Commission to address the threat/risk of workers and the public contracting Valley Fever long before Cal/OSHA developed

preventive requirements. A current example is the rapidly evolving field of stored energy systems where OSHA regulations have not yet been able to address the safety and health threats posed by battery storage.

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 the proposed on-site systems do not comply with established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine if they feel adequately trained, staffed, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on the local fire department. If it does, staff will possibly recommend that the applicant mitigate this impact by providing increased resources to the fire department.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Worker Safety

Industrial environments are potentially dangerous during demolition, construction, commissioning, and operation of facilities. Workers at the proposed Mission Rock facility would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, being struck by objects, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, electrical sparks, and electrocution. It is important for the project owner to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program would be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that would be taken to ensure compliance with the applicable LORS during the site preparation, construction, and operational phases of the project.

Construction Safety and Health Program

The proposed plant would encompass construction (which is hereafter defined to include site preparation where the entire site will be raised 10 feet to bring it out of the 100-year flood plain) and operation of a natural gas-fired facility that also contains a stored energy component. Workers would be exposed to hazards typical of construction and operation of a gas-fired, simple-cycle facility plus the unique hazards posed by Li-ion batteries.

Construction Safety Orders are published at Title 8, California Code of Regulations sections 1502, et seq. These requirements are promulgated by Cal/OSHA and would be applicable to the construction phase of the project. The Construction Safety and Health Program would include the following:

- Construction Injury and Illness Prevention Program (Cal Code Regs., tit. 8, § 1509)
- Construction Fire Prevention Plan (Cal Code Regs., tit. 8, § 1920)
- Personal Protective Equipment Program (Cal Code Regs., tit. 8, §§ 1514 — 1522)
- Construction Emergency Action Program and Plan (Cal Code Regs., tit. 8, § 3220)

Additional programs under General Industry Safety Orders (Cal Code Regs., tit. 8, §§ 3200 to 6184), Electrical Safety Orders (Cal Code Regs., tit. 8, §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (Cal Code Regs., tit. 8, §§ 450 to 544) would include many programs. The following programs include those that staff has found to be among the most important safety programs:

- Lockout/Tagout (LOTO) Control of Hazardous Energy Program (one of the most critical safety programs)
- Permit-Required Confined Space Entry Program (another highly critical safety program)
- Electrical Safety Program
- Excavation/Trenching Program
- Fall Protection Program
- Respiratory Protection Program
- Employee Exposure Monitoring Program
- Hearing Conservation 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

The Application for Certification (AFC) includes adequate outlines of the above programs (CAL 2015a, Table 5.16-1 and 5.16-2). Prior to the start of construction of the project, detailed programs and plans would be provided to the California Energy Commission compliance project manager (CPM) and to the VCFD pursuant to proposed Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of commissioning and commercial operations at Mission Rock, the Operations and Maintenance Safety and Health Program would be prepared. This

operational safety program would include the following programs and plans that would include many of the programs listed above for construction:

- Injury and Illness Prevention Program (Cal Code Regs., tit. 8, § 3203) that would include the required Control of Hazardous Energy (LOTO) program (Cal Code Regs., tit. 8, § 3314 and 29 CFR 1910.147)
- Fire Protection and Prevention Program (Cal Code Regs., tit. 8, § 3221)
- Fire Protection System Impairment Program (2015 NFPA 850 Section 17.4.2 & Chapter 9 California Fire Code (CFC) Section 901.7, 901.7.1-901.7.6)
- Personal Protective Equipment Program (Cal Code Regs., tit. 8, §§ 3401 to 3411)
- Emergency Action Plan (Cal Code Regs., tit. 8, § 3220)

In addition, the requirements under General Industry Safety Orders (Cal Code Regs., tit. 8, §§ 3200 to 6184), Electrical Safety Orders (Cal Code Regs., tit. 8, §§2299 to 2974), and Unfired Pressure Vessel Safety Orders (Cal Code Regs., tit. 8, §§ 450 to 544) would be applicable to the project. The written safety programs developed by the project owner for Mission Rock would ensure compliance with the above-mentioned requirements.

The AFC includes adequate outlines of the Injury and Illness Prevention Program, Emergency Action Plan, Fire Prevention Program, and Personal Protective Equipment Program (CAL 2015a, Section 5.16.2.3). Prior to operation of Mission Rock, all detailed programs and plans would be provided to the CPM and VCFD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

The applicant provided the proposed outlines for both a Construction and Demolition Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. Both safety and health programs would comprise seven more specific programs and would require major items detailed in the following paragraphs.

Injury and Illness Prevention Program

The Injury and Illness Prevention Program (IIPP) would include the following components as presented in the AFC (CAL 2015a, page 5.16-9):

- Identifies the person(s) with authority and responsibility for implementing the program;
- provides a system for ensuring that employees utilize safe and healthy work practices;
- provides a system for facilitating employer-employee communications regarding safety;
- provides procedures for identifying and evaluating workplace hazards, including inspections to identify hazards and unsafe conditions, and to establish and implement safety programs;

- establishes methods for correcting unhealthy/unsafe conditions in a timely manner; and
- provides an employee training program.

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (Cal Code Regs., tit. 8, § 3221). The plan would accomplish the following:

- determine general program requirements;
- determine fire hazard inventory, including ignition sources and mitigation;
- develop good housekeeping practices and proper materials storage;
- establish employee alarm and/or communication system(s);
- provide portable fire extinguishers at appropriate site locations;
- locate fixed fire-fighting equipment in suitable areas;
- specify fire control requirements and procedures;
- establish proper flammable and combustible liquid storage facilities;
- identify the location and use of flammable and combustible liquids;
- provide proper dispensing and determine disposal requirements for flammable liquids;
- establish and determine training and instruction requirements and programs; and
- identify personnel to contact for information on plan contents.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the VCFD for review and comment to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Fire Protection System Impairment Program

NFPA 850 and the California Fire Code lay out a prescriptive method that the project owner must follow when the facility's installed fire protection system is impaired. The plan would accomplish the following:

- supervise the safe shutdown of fire protection systems;
- provide notifications to the proper authorities and representatives;
- control potential fire hazards during the impairments through the use of fire watches and/or evacuation of the area effected;
- outline a repair strategy and timeline to get the fire protection system operational; and
- restore the fire protection system to service as soon as possible.

The Fire Protection System Impairment Program would ensure that the project owner follows the prescriptive measures laid out in NFPA 850 and the CFC. Therefore, staff proposes that the applicant submit a final Fire Protection System Impairment Program to the CPM for review and approval and to the VCFD for review and comment to satisfy the proposed Condition of Certification **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require personal protective equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (Cal Code Regs., tit. 8, §§ 3380 to 3400). The Mission Rock operational environment would require PPE.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and would carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and
- when and how to replace the protective clothing and equipment.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (Cal Code Regs., tit. 8, § 3220). The AFC contains a satisfactory outline for an emergency action plan (CAL 2015a, page 5.16-10).

The outline lists the plans to accomplish the following:

- establish emergency escape procedures and emergency escape route for the facility;
- determine procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the plant has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication system for the facility;

- establish a list of personnel to contact for information on the plan contents;
- provide emergency response procedures for ammonia release; and
- determine and establish training and instruction requirements and programs.

Written Safety Program

In addition to the specific plans listed above, additional LORS called *safe work practices* apply to the project. The Construction, Demolition, and Operations Safety Programs would address safe work practices. The components of these programs include, but are not limited to, the programs found under the heading "**CONSTRUCTION SAFETY AND HEALTH PROGRAM**" in this **Worker Safety and Fire Protection** section.

Safety Training Programs

Employees would be trained in the safe work practices described in the above-referenced safety programs.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by NIOSH:

- More than 7 million persons work in the construction industry, representing 6 percent of the labor force. Approximately 1.5 million of these workers are self-employed.
- Of approximately 600,000 construction companies, 90 percent employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year—more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6 percent) between 1980 and 1993.
- Construction injuries account for 15 percent of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of gas-fired power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction/Demolition Safety Supervisor to ensure a safe and healthful environment for all personnel. This standard practice has reduced and/or eliminated hazards evident in the audits staff recently conducted of power plants under construction. The federal

Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction/Demolition Safety Supervisors, Construction/Demolition Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors in four areas:

- to improve their safety and health performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between, and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and Cal/OSHA standards, documents, and directives. A Competent Person is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3,** which would require the project owner to designate and provide a site Construction/Demolition Safety Supervisor.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the 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 hot work;

- 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, too close to the perimeter fence; and
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by and reporting to the Delegate Chief Building Official (DCBO) and CPM, will serve as an "extra set of eyes" to ensure that safety procedures and practices are fully implemented at this power plant. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged it in questions about the team's findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Fire Hazards

Fire Detection and Suppression Systems

During construction and operation of the proposed 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, insulating fluid at the power plant switchyard, or flammable liquids, explosions, and over-heated equipment, may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires and explosions of natural gas or other flammable gasses or liquids are rare. Compliance with all LORS would be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC and applicant's response to staff's data requests to determine if VCFD's available fire protection services and equipment would be adequate to 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 VCFD (CAL 2015a, Sections 5.16.2.4). However, as noted above, this information found in the AFC would be out of date should the annexation of the SPFD by the VCFD go through in the fall of 2017. Should it go through, fire, rescue, and EMS would be enhanced.

Construction

The proposed facility would use tertiary-treated recycled water supplied by the Limoneira Company via a new water supply pipeline for fire protection (CAL 2015a Section 2.1.9.1). During site preparation and construction, portable fire extinguishers would be placed throughout the site at appropriate intervals and periodically maintained; safety procedures and training would be implemented according to the guidelines of the Construction Fire Protection and Prevention Program (CAL 2015a, Section 2.1.9.1) which will be reviewed and commented on by the VCFD and reviewed and approved by the CPM.

Operations

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the 2016 California Fire Code, all applicable recommended NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. However, staff would like to clarify the enforceability of fire protection best practices document NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations.

The applicant represented in the AFC that the proposed power plant would be built to several NFPA standards, including NFPA 850 (CAL 2015a, Table 5.16-5) and staff concurs with this approach. For power plants permitted by the California Energy Commission, the Delegate Chief Building Official (DCBO) is instructed through the Energy Commission's Delegate Chief Building Official Manual to apply NFPA 850 during construction of the project. This measure has ensured that past projects have been built to the NFPA standard. However, staff believes that because NFPA 850 is written as a set of "recommended" practices rather than "required" ones, the potential for confusion exists about whether conformance to NFPA 850 is indeed required. Staff therefore proposes Condition of Certification **WORKER SAFETY-7,** which would require the project's compliance with NFPA 850, giving NFPA 850 the effectiveness and clear enforceability of a building code in its application to the proposed Mission Rock Energy Center. In any situations where both NFPA 850 and other state or local LORS have application, the more restrictive shall apply. This proposed condition of certification would clarify for all stakeholders the responsibilities of the project owner as they relate to NFPA 850.

Fire suppression elements in the proposed plant would include both fixed and portable fire extinguishing systems. The fire protection water system would consist of a new fire loop and hydrant system, a backup diesel fire pump, fixed fire suppression systems at the gas compressors and turbine lube oil equipment, sprinkler systems in the control room building, the warehouse/maintenance building, and fire pump enclosure, a CO_2 fire-suppression system in each combustion turbine generator (CTG) enclosure along with fire detection sensors and a control system, as well as portable CO_2 and dry chemical extinguishers located throughout the power plant site (CAL 2015a, Section 2.1.13). These systems are standard requirements of NFPA and the California Fire Code, and staff has determined that they will ensure adequate fire protection.

Staff determined that the AFC is silent in one fire protection-related area which pertains to fire department emergency access to the site. Staff usually recommends at least two access points to a power plant and has been uniformly supported by local fire authorities throughout the state. Staff has determined that this is a sound fire safety practice and allows for fire department vehicles and personnel to access the site should the main gate be blocked for any reason. Staff therefore discussed with the Sheriff's Department the possibility of using Todd Road through the Todd Road Ventura County Jail as a secondary emergency access route. Todd Road would lead south through the jail property to Shell Road and Shell Road would lead east to the project site. In an October 14, 2016 meeting with staff of the Todd Road Jail Administration, Ventura County Sheriff's Office, it was agreed that the VCFD would have access through the jail property along Todd Road. There are two gates to traverse; the front (north) gate is remotely viewed and activated by jail staff and access would be given to the VCFD 24/7. The back (south) gate at the intersection of Todd Road and Shell Road has a chain and padlocks. The VCFD would be allowed to place its own lock on that gate and keep the keys, thus allowing access through that gate to Shell Road. This was discussed with Battalion Chief McNeil and he voiced agreement (McNeil 2017b). Staff proposes Condition of Certification **WORKER SAFETY-6** that would require the project owner to identify, provide, and maintain for the lifetime of the project, this secondary access to the site and to ensure that the access roads meet the requirements of the Ventura County Municipal Code for emergency response vehicles.

On-Site Stored Energy System: Lithium-ion Batteries

A state-of-the-art feature of this proposed power plant would be the use of a 25 MW stored energy system on-site: Lithium-ion (Li-ion) battery power. The applicant has stated in the AFC that the batteries would be "lithium-ion and/or flow types (CAL 2015a, Section 2.1.3). In Data Request #113, staff requested the applicant to provide additional information about the hazards associated with the 20 energy storage batteries proposed to be located on the site. Staff asked for a Hazard Analysis of the potential for fire, explosion, and leaks involving any or all of the twenty battery units, a brief history of known fires, explosions, and leaks involving Lithium-ion (Li-ion) batteries and those that are very similar, and the manufacturer's product sheet and MSDS for the batteries. The applicant responded that "statistically, lithium-ion batteries are very reliable", that failure rates are very low (on the order of 1 in 10 million cells) and acknowledged that an incident related to the batteries can be serious and include fire and explosions (CH2M 2016c). A manufacturer's Safety Data Sheet (SDS) for the batteries was provided in the data response as attachment DR113-1. Staff also requested the applicant to include training of site personnel on the hazards of Li-ion batteries in Data Request # 114. The applicant responded that the batteries would be configured inside 20 "protective containers which will help prevent crushing, opening or puncturing of the batteries", that the "containers will be arranged in battery storage racks away from heat sources", and that the power plant's "health and safety training program will include a component on safe battery handling" (CH2M 2016c). Staff notes that the applicant's data response addressed only Li-ion batteries, not "flow-type" batteries which are very different in design, features, and hazard posed and thus staff is proposing to limit the project owner to installing only Li-ion batteries on the site as its stored energy system.

Staff conducted its own evaluation of the safety of Li-ion battery packs and concluded that the proposed use of Li-ion batteries poses a unique fire hazard. New energy storage systems of various sizes and types are being constructed and placed nearly everywhere in the world. Unfortunately, there are few fire safety requirements in place to ensure safe design, installation, and hazard mitigation. Therefore, hazards that exist at these installations threaten the safety of fire fighters, first responders, power plant workers, and the off-site public. This is not unique to energy storage systems or Li-ion batteries; it is often the case that safety and fire prevention lags behind technological development in new emerging technology. Underwriters Labs (UL) and the National Fire Prevention Association (NFPA) are two industrial standards organizations currently developing safety standards for stored energy systems. In California, there are no Cal/OSHA, State Fire Marshall, or local regulations that address stored energy systems with the exception of the U.S. Department of Transportation (DOT 2016) guidance on the transport of Li-ion batteries and UL Standard 9540. The Fire Protection Research Institute, a research entity that serves the NFPA, has published three Hazard and Use Assessments (FPRI 2011, 2013, 2016) that address some of the hazards of stored energy systems that use Li-ion batteries and sprinkler protection criteria for warehouse storage of Li-ion batteries in cardboard cartons. However, a new standard is being developed by the National Fire Protection Association (NFPA) for energy storage systems. NFPA 855: Standard for the Installation of Stationary Energy Storage Systems is currently being developed by a technical committee and should be forthcoming in 2020. Underwriters Labs (UL) has published a safety report that addresses the hazards of commercial Li-ion batteries but does not include issues surrounding large-scale stored energy systems (UL 2017). UL also developed Standard 1642 in 2015 for small consumer and industrial Li-ion batteries, and recently issued Standard 9540 (UL 2016) for energy storage systems that are intended to provide electrical energy to the grid. A report from U.S. Department of Energy Sandia Laboratory (PNNL 2016) described various guides for compliance with many safety codes, however, specific codes for large utility-scale stored energy systems using Li-ion batteries are not yet available but are being developed. The US Department of Transportation (DOT) has already set out regulations under UN/DOT 38.3 that govern the testing of lithium ion batteries to ensure they are safe for transport. The California Fire Code (CFC) currently covers stationary battery storage systems under section 608.1. However, most of the requirements are not required for lithium ion battery systems. The California Fire Marshall has also submitted Article 706 Energy Storage Systems to be amended to the 2016 California Electrical Code and would go into effect in July 2018. All of these provide evidence that the regulatory environment is quickly evolving to deal with this new technology but still needs time to implement these needed safety regulations.

A review of the safety of these batteries finds that these batteries contain a combustible liquid electrolyte that may vent, ignite, and produce sparks when subjected to high temperatures (> 150° C or 302° F) when damaged or abused (e.g., mechanical damage or electrical overcharging). If a fire ensues, it may burn rapidly with flare-burning effect and may ignite other batteries in close proximity. Fire fighter contact with the battery electrolyte may be irritating to skin, eyes and mucous membranes, the fire will produce irritating, corrosive, and/or toxic gases, and may even produce extremely toxic hydrogen fluoride gas. The fumes from a fire, therefore, may cause dizziness, severe eye and

respiratory system irritation/damage, or suffocation, and thus PPE (Personal Protective Equipment) may be required to suppress a Li-ion battery fire. These batteries are similar to the ones found in cell phones, in the early B-787 commercial jet, and in Tesla electric automobiles, of which a few have over-heated and caught fire. Due to the potential for fire and the release of toxic gases from this type of stored energy system, staff concludes that the stored energy system proposed by the applicant for the Mission Rock Energy Center presents a significant risk of on-site fire that must be mitigated.

Fire suppression can be problematic and the use of water spray, fog, or regular foam have been recommended (DOT 2016). In order to ensure that the Li-ion batteries proposed for use at the Mission Rock location will be operated in a safe manner, on April 12, 2017, staff visited a newly-constructed and operating 30 MW Li-ion energy storage system in Escondido, Ca. that went on-line approximately March 15, 2017. Each of the 24 self-contained modular compartments, each containing thousands of cigar-box size Li-ion batteries, contains its own fire detection and suppression system with command and control systems located remotely in a nearby natural gas-fired power plant. In this case, the project owner first hired a fire expert to conduct a process hazard assessment to identify potential issues, then worked closely with the local fire authority to design and implement a fire detection and suppression system, and then integrated that system into the design of the modules as mitigation. Collaborating with the local fire authority was instrumental in ensuring an acceptable fire protection system.

It is staff's, understanding that the applicant's proposed Li-ion battery system will be purchased "off the shelf" as "turn-key" systems and thus, unlike Escondido, the project owner may not have the ability to add mitigating fire detection and suppression systems inside the battery containers. Nevertheless, staff has concluded that mitigation is necessary and therefore proposes Condition of Certification **Worker Safety-8** to reduce a potential risk to a less than significant level. **Worker Safety-8** would require the project owner to meet any current regulatory requirements at the time of construction, to obtain UL 9540 certification for the stored energy system, and to collaborate with the VCFD in the review of fire safety provisions to be provided for the stored energy system. The project owner would also be required to provide necessary system information and opportunities for on-site fire training to the VCFD to assist them in updating their standard operating procedures for dealing with a potential lithium ion battery fire at the Mission Rock facility. This will ensure that the design and implementation of a fire detection, suppression system, and procedures are consistent with applicable recommendations contained in then-current regulations and industry guidance as well as those described in Energy Storage System Guide for Compliance with Safety Codes and Standards published by the U.S. Department of Energy (PNNL 2016). The projects owner would be required under proposed **WS-8** to submit the design specification to the Energy Commission for review and approval prior to receiving the Li-ion batteries on-site. In this manner, the project owner, the VCFD, and the Energy Commission can ensure that the risks posed to first responders, on-site workers, and the off-site public are mitigated to a level of insignificance.

Valley Fever (Coccidioidomycosis)

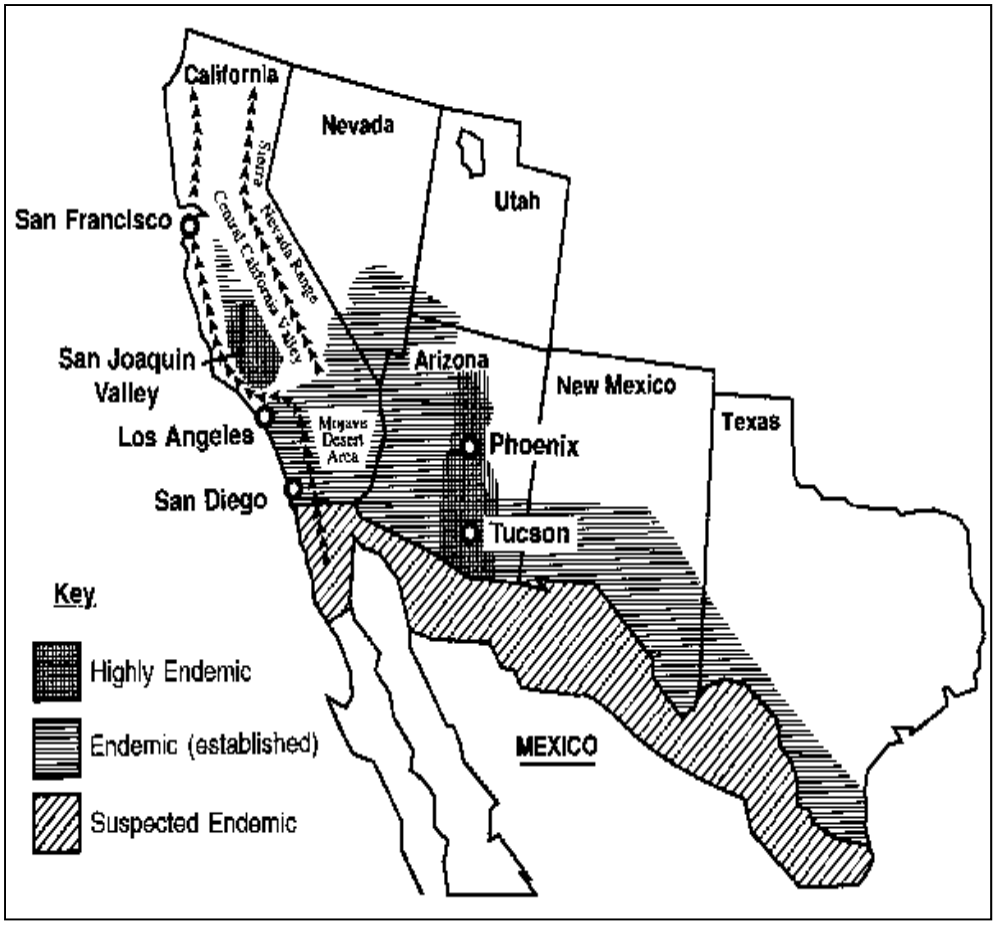
Coccidioidomycosis or "Valley Fever" is primarily encountered in southwestern states, particularly in Arizona and California. It is caused by inhaling the spores of the fungus *Coccidioides immitis*, which are released from the soil during soil disturbance (e.g., during construction activities) or wind erosion. The disease usually affects the lungs and can have potentially severe consequences, especially in at-risk individuals such as the elderly, pregnant women, and people with compromised immune systems. Trenching, excavation, and construction workers are often the most exposed population. Treatment usually includes rest and antifungal medications. No effective vaccine currently exists for Valley Fever. Valley Fever is endemic to the San Joaquin Valley in California, which presumably gave this disease its common name. In California, the highest Valley Fever rates are recorded in Kern, Kings, and Tulare Counties, followed by Fresno and San Luis Obispo Counties. LA County, San Diego County, San Bernardino County, and Riverside County also have reported Valley Fever cases although much fewer.

In Ventura County, between January 24 and March 15, 1994, a sudden and unusual outbreak of 203 Valley Fever cases, which included 3 fatalities, occurred (rate 30 cases per 100,000 population). The majority of cases (56%) and the highest incidence rate (114 per 100,000 population) occurred in the eastern part of Ventura County in Simi Valley when it experienced numerous landslides associated with the January 1994 Northridge earthquake (Schneider, et al, 1997). A similar outbreak of Valley Fever in Ventura County was reported in March 2004 and ascribed to the wildfires that occurred in the fall of 2003. According to Dr. Robert Levin, Ventura County public health officer, the fires destroyed vegetation and ground cover in the area, exposing soil that contains fungal spores that can be transmitted by dust particles in the wind. Since October 2003, more than 70 cases of Valley Fever were reported in Ventura County with two-thirds of them found in the eastern part of the county where the Simi fire destroyed more than 108,000 acres. Normally, the county sees about two cases of valley fever per month. The Ventura County Air Pollution Control District (VCAPCD) Rule 55 (adopted June 2008) regulates the emissions of fugitive dust from such sources as agriculture, mining, and construction activity and serves to help reduce spores of the fungus *Coccidioides immitis* into the air during soil disturbance.

A February 2013 outbreak of Valley Fever affecting at least 28 workers at a photovoltaic solar plant in eastern San Luis Obispo County, along with an increase in inmates at two San Joaquin Valley prisons coming down with the disease, has sparked renewed interest and concern. (The California Department of Public Health, Cal-OSHA, and San Luis Obispo County are investigating that outbreak.) The Centers for Disease Control and Prevention says the total number of Valley Fever cases nationwide rose by nearly 900 percent from 1998 to 2011. Researchers don't have a good explanation for the dramatic increase even when accounting for growing populations throughout the Southwest, although when soil is dry and it is windy, more spores are likely to become airborne in endemic areas, according to Dr. Gil Chavez, Deputy Director of the Center for Infectious Diseases at the California Department of Public Health.

Worker Safety and Fire Protection - Figure 1
The Geographic Distribution of Coccidioidomycosis*

*__Source__: CDC 2006, Figure 2



A report from the U.S. Centers for Disease Control (CDC 2012) showed that the rise in Valley Fever incidence has resulted in it being a major cause of community-acquired pneumonia in California and the southwestern U.S. The CDC found that in 2011, more than 20,000 cases were reported in the U.S., twice as many cases as tuberculosis, nearly 75 percent of people who get Valley Fever miss work or school due to their illness, and more than 40 percent of people who get valley fever need to be hospitalized. As mentioned above, in Ventura County after the Northridge earthquake of 1994, 203 cases, including 3 deaths, occurred with most of the cases occurring in Simi Valley.

In 2001, persons attending the World Championship of Model Airplane Flying in Lost Hills in Kern County experienced at least 7 cases of Valley Fever after attending this event for only a few days. And at the Taft Correctional Facility in Kern County, 88 cases were identified from 2003-04. In 2011, 5697 cases in California were reported to public health officials.

A 2004 CDC report found that the number of reported cases of coccidioidomycosis in the US increased by 32 percent during 2003-2004, with the majority of these cases occurring in California and Arizona. The report attributed these increases to changes in

land use, demographics, and climate in endemic areas, although certain cases might be attributable to increased physician awareness and testing (CDC 2006). According to the CDC Morbidity and Mortality Weekly Report of February 2009, incidences of valley fever have increased steadily in Arizona and California in the past decade. Cases of coccidioidomycosis averaged about 2.5 per 100,000 population annually from 1995 to 2000 and increased to 8.0 per 100,000 population between 2000 and 2006 (incident rates tripled). In 2007 there was a slight drop in cases, but the rate was still the highest it has been since 1995. The report identified Kern County as having the highest incidence rates (150.0 cases per 100,000 population), and non-Hispanic blacks having the highest hospitalization rates (7.5 per 100,000 population). In addition, between the years 2000 and 2006, the number of valley fever related hospitalizations climbed from 1.8 to 4.3 per 100,000 population (611 cases in 2000 to 1,587 cases in 2006) and then decreased to 1,368 cases in 2007 (3.6 per 100,000 population). Overall in California, during 2000-2007, a total of 752 (8.7 percent) of the 8,657 persons hospitalized for coccidioidomycosis died (CDC 2009).

A 2007 study published in the Emerging Infectious Diseases journal of the Center for Disease Control and Prevention (CDC), found the frequency of hospitalization for coccidioidomycosis in the entire state of California to be 3.7 per 100,000 residents per year for the period between 1997 and 2002 (see Table 3 below). There were 417 deaths from VF in California in those years, resulting in a mortality rate of 2.1 per 1 million California residents annually.

Worker Safety and Fire Protection Table 2
Hospitalizations for Coccidioidomycosis, California, 1997–2002*

Category	Total hospitalizations	Total person-yrs (× 10^6)	Frequency of hospitalization**	Frequency Of Hospitalization For Coccidioidal Meningitis**
Total	7,457	203.0	3.67	0.657
Year				
1997	1,269	32.5	3.90	0.706
1998	1,144	32.9	3.50	0.706
1999	1,167	33.4	3.5	0.61
2000	1,100	34.0	3.23	0.62
2001	1,291	34.7	3.7	0.58
2002	1,486	35.3	4.2	0.71
Highest Incidence Counties				
Kern	1,700	3.97	42.8	
Tulare	479	2.21	21.7	
Kings	133	0.77	17.4	
SLO	170	1.48	11.5	

***Source**: Flaherman 2007 **Per 100,000 residents per year

A 1996 paper that tried to explain the sudden increase in Coccidioidomycosis cases that began in the early 90s found that the San Joaquin Valley in California has the largest population of *C. immitis*, which is found to be distributed unevenly in the soil and seems to be concentrated around animal burrows and ancient Indian burial sites. It is usually found 4 to 12 inches below the surface of the soil. The paper also reported that incidences of coccidioidomycosis vary with the seasons; with highest rates in late summer and early fall when the soil is dry and the crops are harvested. Dust storms are frequently followed by outbreaks of coccidioidomycosis (Kirkland 1996). A modeling attempt to establish the relationship between fluctuations in Valley Fever incident rates and weather conditions in Kern County found that there is only a weak connection between weather and Valley Fever cases (weather patterns correlate with up to 4 percent of outbreaks). The study concluded that the factors that cause fluctuations in Valley Fever cases are not weather-related but rather biological and anthropogenic (i.e. human activities, primarily construction on previously undisturbed soil) (Talamantes 2007).

During correspondence with Dr. Michael MacLean of the Kings County Health Department, he noted that according to his experience and of those who study Valley Fever, it is very hard to find the fungus in soil that was previously farmed and irrigated, which greatly reduces the risk of infection resulting from disturbance of farmed lands. This does not apply to previously undisturbed lands where excavation, grading, and construction may correlate with increases in Valley Fever cases. Dr. MacLean feels that

with the current state of knowledge, we can only speculate on the causes and trends influencing Valley Fever cases and he does not feel that construction activities are necessarily the cause of Valley Fever outbreaks (KCEHS 2009).

Valley Fever is spread through the air. If soil containing the fungus is disturbed by construction, natural disasters, or wind, the fungal spores get into the air where people can breathe in the spores. The disease is not spread from person to person. Occupational or recreational exposure to dust is an important consideration. Agricultural workers, construction workers, or others (such as archeologists) who dig in the soil in the disease-endemic area of the Central Valley are at the highest risk for the disease (CDC 2006; CDHS 2010). The risk for disseminated coccidioidomycosis is much higher among some ethnic groups, particularly African-Americans and Filipinos. In these ethnic groups, the risk for disseminated coccidioidomycosis is tenfold that of the general population (CDC 2006).

Given the available scientific and medical literature on Valley Fever and the outbreaks in California including in Ventura County, there is a clear potential for Valley Fever to impact workers during site preparation, construction, and operation of the proposed Mission Rock power plant. A significant amount of outside “fill” soil would be brought to the site to raise the entire site by 10 feet, and this fill soil could contain spores of *C.immitis*. To minimize this potential exposure of workers and also the public to coccidioidomycosis during site preparation and grading, extensive wetting of the soil prior to and during site preparation and construction activities would be employed and dust masks would be worn at certain times during these activities. The dust (PM10) control measures found in the Air Quality section of this staff assessment should be

strictly adhered to in order to adequately reduce the risk of contracting Valley Fever to a level of less than significant. Towards that, staff proposes Condition of Certification **WORKER SAFETY-9** which would require that the dust control measures found in proposed Conditions of Certification **AQ-SC3** and **AQ-SC4** be supplemented with additional requirements including implementing enhanced dust suppression methods and providing NIOSH approved N95 dust masks and requiring that on-site workers wear them during periods of high dust during site preparation, construction, and operations. As is often the case, if on-site workers are protected from excessive dust generation, the off-site public will be protected as well because dust would not be generated that could migrate off the site.

WORKER SAFETY AND FIRE PROTECTION - TABLE 3
Disease Forms of Valley Fever

CATEGORIES	NOTES
Asymptomatic	• Occurs in about 50% of patients
Acute Symptomatic	• Pulmonary syndrome that combines cough, chest pain, shortness of breath, fever, and fatigue. • Diffuse pneumonia affects immunosuppressed individuals • Skin manifestations include fine papular rash, erythema nodosum, and erythema multiforme • Occasional migratory arthralgias and fever
Chronic Pulmonary	• Affects between 5 to 10% of infected individuals • Usually presents as pulmonary nodules or peripheral thin-walled cavities
Extrapulmonary/Disseminated Varieties	
Chronic skin disease	• Keratotic and verrucose ulcers or subcutaneous fluctuant abscesses
Joints / Bones	• Severe synovitis and effusion that may affect knees, wrists, feet, ankles, and/or pelvis • Lytic lesions commonly affecting the axial skeleton
Meningeal Disease	• The most feared complication • Presenting with classic meningeal symptoms and signs • Hydrocephalus is a frequent complication
Others	• May affect virtually any organ, including thyroid, GI tract, adrenal glands, genitourinary tract, pericardium, peritoneum

And because Valley Fever incidences are not only probable in dry environments such as the Santa Clara River Valley in Ventura County, and have now occurred at solar power plants under construction in similar climate areas of California, staff believes it is imperative to keep track of these incidences to ensure that all worker protections are indeed being implemented and are adequate. Therefore, staff proposes new Condition **WORKER SAFETY-10** which would require the project owner to immediately report all verified incidences of Valley Fever in all workers at the site to the CPM within 24 hours of receiving notification from a medical professional that the worker does indeed have Valley Fever. In this manner, staff can have an up-to-date database of occurrences at

all power plants in areas where *C.immitus* is endemic to assist in determining the adequacy of worker protection. This proposed condition would also require the reporting of any heat illness to the CPM. Prevention of heat illness is required by Cal/OSHA regulation 3395.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents

at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer fire-fighting staff. However, staff has determined that the potential for both work-related and non-work-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants shows that many of the responses for cardiac emergencies involved non-work-related incidences, including those involving visitors. The need for prompt response within a few minutes is well documented in medical literature. Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for many private and public locations (e.g., airports, factories, government buildings) maintaining on-site cardiac defibrillation devices. Therefore, staff concludes that, with the advent of modern cost-effective cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site in order to treat cardiac arrhythmias resulting from industrial accidents or other non-work related causes.

Staff proposes Condition of Certification **WORKER SAFETY-5,** which would require that this portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the construction and operation of the proposed project combined with existing industrial facilities and expected new facilities to result in impacts on the fire and emergency service capabilities of the VCFD and found that there was no significant potential for cumulative impacts to occur.

Based upon staff's experience with power plants around the state, staff concludes that while it is *possible* that during a major earthquake (or other major event) response to the power plant could impact on the VCFD, the *likelihood* of that happening is less than significant. Therefore, this project would not have a significant incremental or cumulative impact on the department's ability to respond to a fire or other emergency and no mitigation is required.

The VCFD has stated that its ability to respond to emergency calls will not be affected by the construction and operation of proposed Mission Rock Energy Center (McNeill 2017b)

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the proposed Mission Rock Energy Center 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 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 fulfills the requirements of Condition of Certification **WORKER SAFETY-3** through **-10** as well as those safety and fire protection measures listed in the AFC by the applicant, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that the operation of this power plant would not present a significant 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 Health and Safety Program containing the following:

- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Injury and Illness Prevention Program;
- a Construction Emergency Action Plan; and
- a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Ventura County Fire Department for review and comment prior to submittal to the CPM for approval.

Verification: At least 60 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 and Safety and Health Program. The project owner shall provide to the CPM a copy of a

letter from the Ventura County Fire Department stating the fire department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- Operation Injury and Illness Prevention Plan;
- procedures to follow to protect the Li-ion batteries and respond to punctures, leaks, fire, and other threats to the integrity of the batteries;
- Control of Hazardous Energy (Logout/Tagout) Program
- Emergency Action Plan;
- Hazardous Materials Management Program;
- Operations Fire Prevention Plan (Cal Code Regs., tit. 8, § 3221);
- Fire Protection System Impairment Program; and
- Personal Protective Equipment Program (Cal Code Regs, tit.8, §§ 3401—3411).

The Operations Fire Prevention Plan, Fire Protection System Impairment Program, and the Emergency Action Plan shall be submitted to the Ventura County Fire Department for review and comment. The Project Operations and Maintenance Safety and Health Program, including all listed items above, shall be submitted to the CPM for review and approval.

Verification: At least 60 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for review and approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy to the CPM of a letter from the Ventura County Fire Department stating the fire department's timely comments on the Operations Fire Prevention Plan, Fire Protection System Impairment Program, and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
- assure that all construction and commissioning workers and supervisors receive adequate safety training;

- complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and
- assure that all the plans identified in Conditions of Certification **WORKER SAFETY**-1 and -2 are implemented.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS) for review and approval. The contact information of any replacement CSS shall be submitted to the CPM within one business day for review and approval.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health;
- report any visits from Cal/OSHA and/or any complaints from workers to Cal/OSHA; and
- report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Delegate Chief Building Official (DCBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the DCBO. Those services shall be in addition to other work performed by the DCBO. The Safety Monitor shall be selected by and report directly to the DCBO, will be responsible for monitoring/auditing the construction activities and practices of the site for unsafe working practices or conditions, and providing feedback to the site Construction Safety Supervisor. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that at least one (1) portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction, commissioning, and demolition, the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction/Demolition Project Manager or delegate, the Construction/Demolition Safety Supervisor or delegate, and all shift foremen. During operations, all power plant

employees shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM for review and approval proof that a portable automatic external defibrillator (AED) and a copy of the training and maintenance program is available on site.

WORKER SAFETY-6 The project owner shall prepare an Emergency Access Plan that shows that the secondary emergency access to the Mission Rock site is via Todd Road, through the Todd Road Jail property, then onto Shell Road and into the site and that the specifications of the roadway comply with the Ventura County Municipal Code and the 2016 California Fire Code. This secondary access must be maintained to the standards set in the Ventura County Municipal Code and the California Fire Code for the life of the project.

Verification: At least 60 days prior to the start of construction, or within a time frame approved by the CPM, the project owner shall submit the Emergency Access Plan showing the secondary emergency access, that complies with the Ventura County Municipal Code and the 2016 California Fire Code, to the Ventura County Fire Department for review and timely comment, and to the CPM for review and approval. If the secondary access to the site is at any time proposed to be changed, the project owner shall submit such a request to the CPM at least 90 days before that change is desired to occur. At the same time that a request for a change in the secondary emergency access is submitted to the CPM, the project owner shall also submit an updated Emergency Access plan to the CPM for review approval that shows the new location/arrangement for the new secondary emergency access.

WORKER SAFETY-7 The project owner shall adhere to all applicable provisions of the latest version of NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations, as the minimum level of fire protection. The project owner shall interpret and adhere to all applicable NFPA 850 recommended provisions and actions stating “should” as “shall.” In any situations where both NFPA 850 and the state or local LORS have application, the more restrictive shall apply.

Verification: The project owner shall ensure that the project adheres to all applicable provisions of NFPA 850. At least 60 days prior to the start of construction of the fire protection system, the project owner shall provide all fire protection system specifications and drawings to the Ventura County Fire Department for review and comment, to the CPM for review and approval, and to the DCBO for plan check and construction inspection.

WORKER SAFETY-8 The project owner shall use only Li-ion batteries in the 25 MW stored energy system and no less than 90 days prior to receiving the first Li-ion battery on-site that is part of the 25 MW stored energy system, the project owner shall ensure that the lithium ion battery energy storage system has UL Standard for Safety for Energy Storage Systems and Equipment, UL 9540 certification by submitting the certification along with the fire protection drawings and specifications for the energy storage system to the VCFD for review and

comment and to the CPM for review and approval. The project owner shall also collaborate with the VCFD to assist the development of standard operating procedures for first responders to implement when confronting a fire occurring within the lithium ion battery system located on site.

Verification: At least 90 days prior to receiving the first Li-ion battery on-site that is part of the 25 MW stored energy system, the project owner shall:

1. Provide UL 9540 certification along with the fire protection drawings and specifications for the energy storage system to the VCFD for review and comment and to the CPM for review and approval.

2. Provide to the CPM a copy of a letter sent from the project owner to the VCFD offering collaboration and assistance in developing standard operating procedures for first responders to deal with any lithium ion battery fires occurring at the project site.

WORKER SAFETY-9 The project owner shall develop and implement an enhanced Dust Control Plan that includes the requirements described in **AQ-SC3** and additionally requires:

i. Site worker use of dust masks (NIOSH N-95 or better) whenever visible dust is present;

ii. Implementation of enhanced dust control methods (increased frequency of watering, use of dust suppression chemicals, etc. consistent with **AQ-SC4**) immediately whenever visible dust comes from or onto the site.

Verification: Verification**:** At least 60 days prior to the commencement of site mobilization, the enhanced Dust Control Plan shall be provided to the CPM for review and approval.

WORKER SAFETY-10 The project owner shall report to the CPM within 24 hours of any incidence of heat illness (heat stress, exhaustion, stroke, or prostration) occurring in any worker on-site and shall report to the CPM the incidence of any confirmed case of Valley Fever in any worker on the site within 24 hours of receipt of medical diagnosis.

Verification: The project owner shall provide reports of heat-related and Valley Fever incidences in any worker on the site via telephone call or e-mail to the CPM within 24 hours of a heat-related occurrence or confirmed diagnosis of a case of Valley Fever, and shall include a written report in the Monthly Compliance Report during construction and within 10 days during operations.

REFERENCES

California Department of Health Services (CDHS) "Coccidiodomycosis (Valley Fever)" information page, 2010. http://www.cdph.ca.gov/HealthInfo/discond/Pages/Coccidioidomycosis.aspx

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COMPLIANCE CONDITIONS AND COMPLIANCE MONITORING PLAN

Eric W. Veerkamp

INTRODUCTION

The Mission Rock Energy Center Compliance Conditions of Certification, including a Compliance Monitoring Plan (Compliance Plan), are established as required by Public Resources Code section 25532. The Compliance Plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety and environmental law; all other applicable laws, ordinances, regulations, and standards (LORS); and the conditions adopted by the California Energy Commission Decision on the project's Application for Certification (AFC), or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the compliance project manager (CPM), the project owner or operator, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission-approved conditions of certification;
- establish contingency planning, facility non-operation protocols, and closure requirements; and
- establish a tracking method for the technical area conditions of certification that contain measures required to mitigate potentially adverse project impacts associated with construction, operation, and closure below a level of significance; each technical condition of certification also includes one or more verification provisions that describe the means of assuring that the condition has been satisfied.

This section has been updated to reflect current definitions, clarify roles and responsibilities, and changes in amendment processing.

KEY PROJECT EVENT DEFINITIONS

The following terms and definitions help determine when various conditions of certification are implemented.

PROJECT CERTIFICATION

Project certification occurs on the day the Energy Commission dockets its decision after adopting it at a publically noticed Business Meeting or hearing. At that time, all Energy Commission conditions of certification become binding on the project owner and the proposed facility. Also at that time, the project enters the compliance phase. The project retains the same docket number it had during its siting review, but the letter "C" is added at the end (for example, 19-AFC-8C) to differentiate the compliance phase activities from those of the certification proceeding.

SITE ASSESSMENT AND PRE-CONSTRUCTION ACTIVITIES

The below-listed site assessment and pre-construction activities may be initiated or completed prior to the start of construction, subject to the CPM's approval of the specific site assessment or pre-construction activities.

Site assessment and pre-construction activities include the following, but only to the extent the activities are minimally disruptive to soil and vegetation and will not affect listed or special-status species or other sensitive resources:

1. the installation of environmental monitoring equipment;

2. a minimally invasive soil or geological investigation;

3. a topographical survey;

4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility;

5. any minimally invasive work to provide safe access to the site for any of the purposes specified in one through four, above; and

6. removal of small surface structures and equipment that is minimally invasive such as sheds, trailers, and similar sized structures.

SITE MOBILIZATION AND CONSTRUCTION

When a condition of certification requires the project owner to take an action or obtain CPM approval prior to the start of construction, or within a period of time relative to the start of construction, that action must be taken, or approval must be obtained, prior to any site mobilization or construction activities, as defined below.

Site mobilization and construction activities are those necessary to provide site access for construction mobilization and facility installation, including both temporary and permanent equipment and structures, as determined by the CPM.

Site mobilization and construction activities include, but are not limited to:

1. ground disturbance activities like grading, boring, trenching, leveling, mechanical clearing, grubbing, and scraping;

2. site preparation activities, such as access roads, temporary fencing, trailer and utility installation, construction equipment installation and storage, equipment and supply laydown areas, borrow and fill sites, temporary parking facilities, chemical spraying, controlled burns; and

3. permanent installation activities for all facility and linear structures, including access roads, fencing, utilities, parking facilities, equipment storage, mitigation and landscaping activities, and other installations, as applicable.

COMMISSIONING

Commissioning activities test the functionality of the installed components and systems to ensure the facility operates safely and reliably. Commissioning provides a multistage, integrated, and disciplined approach to testing, calibrating, and proving all of the project's systems, software, and networks. For compliance monitoring purposes, examples of commissioning activities include interface connection and utility pre-testing, "cold" and "hot" electrical testing, system pressurization and optimization tests, grid synchronization, and combustion turbine "first fire" and tuning.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, "commercial operation" or "operation" begins once commissioning activities are complete, the certificate of occupancy has been issued, and the power plant has reached reliable steady-state electrical production. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager. Operation activities can include a steady state of electrical production, or, for "peaker plants," a seasonal or on-demand operational regime to meet peak load demands.

NON-OPERATION AND CLOSURE

Non-operation is time limited and can encompass part or all of a facility. Non-operation can be a planned event, usually for equipment maintenance or repair, or unplanned, usually the result of unanticipated events or emergencies.

Closure is a facility shutdown with no intent to restart operation. It may also be the cumulative result of unsuccessful efforts to restart over an increasingly lengthy period of non-operation. Facility closures can occur due to a variety of factors, including, but not limited to, irreparable damage and/or functional or economic obsolescence.

ROLES AND RESPONSIBILITIES

Provided below is a generalized description of the compliance roles and responsibilities for Energy Commission staff (staff) and the project owner for the construction and operation of the Mission Rock Energy Center.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The CPM's compliance monitoring and project oversight responsibilities include:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Decision;

2. resolving complaints;

3. processing post-certification project amendments for changes to the project description, conditions of certification and ownership or operational control, and requests for extension of the deadline for the start of construction (see **COM-10** for instructions on filing a Petition to Amend (PTA) or to extend a construction start date);

4. documenting and tracking compliance filings; and

5. ensuring that the compliance files are maintained and accessible.

The CPM is the central contact person for the Energy Commission during project pre-construction, construction, operation, emergency response, and closure. The CPM will consult with the appropriate responsible parties when handling compliance issues, disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal requires CPM approval, required by a condition of certification, the approval will involve appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (.pdf, MS Word, or equivalent files).

Pre-Construction and Pre-Operation Compliance Meeting

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start dates of construction, plant operation, or both. These meetings are used to assist the Energy Commission and the project owner's technical staff in the status review of all required pre-construction or pre-operation conditions of certification, and facilitate staff taking proper action if outstanding conditions remain. In addition, these meetings shall ensure, to the extent possible, that the Energy Commission's conditions of certification do not delay the construction and operation of the plant due to last-minute unforeseen issues, or a compliance oversight. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

Energy Commission Record

The Energy Commission maintains the following documents and information as public record, in either the Compliance file or Dockets Unit files, for the life of the project (or other period as specified):

- all documents demonstrating compliance with any legal requirements relating to the construction, operation, and closure of the facility;
- all Monthly and Annual Compliance Reports (MCRs, ACRs) and other required periodic compliance reports (PCRs) filed by the project owner;
- all project-related formal complaints of alleged noncompliance filed with the Energy Commission; and
- all petitions for project or condition of certification changes and the resulting action by staff or the Energy Commission.

CHIEF BUILDING OFFICIAL DELEGATION AND AGENCY COOPERATION

Public Resources Code section 25532 requires the Energy Commission to establish a monitoring system to assure that any facility it certifies is constructed and operated in a manner consistent with law and the Energy Commission's decision. In carrying out these responsibilities through monitoring construction and operation of the project, the Energy Commission has the responsibilities of the chief building official (CBO) consistent with Health and Safety Code section 18949.27 and Title 24, part 2, section 104 (commonly referred to as the California Building Code, or CBC). Staff may delegate some CBO responsibility to either an independent third-party contractor or a local building official, as per section 103.3 of part 2 of the CBC. However, staff retains CBO authority when selecting a delegate CBO (DCBO), including the interpretation and enforcement of state and local codes, and the use of discretion, as necessary, in implementing the various codes and standards. (See section 104.1 of part 2 of the CBC).

The DCBO will be responsible for the implementation of all appropriate codes, standards, and Energy Commission requirements. The DCBO will conduct on-site (including linear facilities) reviews and inspections at intervals necessary to fulfill these responsibilities. The project owner will pay all DCBO fees necessary to cover the costs of these reviews and inspections.

PROJECT OWNER RESPONSIBILITIES

Should the project be approved, the project owner is responsible for ensuring that all conditions of certification and applicable LORS in the Mission Rock Energy Center Final Decision are satisfied. The project owner will submit all compliance submittals to the CPM for processing unless the conditions specify another recipient. The Compliance conditions regarding post-certification changes specify measures that the project owner must take when modifying the project's design, operation, or performance requirements, or to transfer ownership or operational control. Failure to comply with any of the conditions of certification or applicable LORS may result in a non-compliance report, an administrative fine, certification revocation, or any combination thereof, as appropriate. A summary of the Compliance conditions of certification are included as **Compliance Table 1** at the end of this Compliance Plan.

COMPLIANCE ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision are specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke a project certification and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Decision. The Energy Commission's actions and fine assessments would take into account the specific circumstances of the incident(s).

PERIODIC COMPLIANCE REPORTING

Many of the conditions of certification require submittals in the MCRs and ACRs. All compliance submittals assist the CPM in tracking project activities and monitoring compliance with the terms and conditions of the Mission Rock Energy Center Final Decision. During construction, the project owner, or an authorized agent, will submit compliance reports on a monthly basis. During operation, compliance reports are submitted annually; though reports regarding compliance with various technical area conditions of certification may be required more often (e.g. AIR QUALITY), and if the project is operating with a temporary permit to occupy. Further detail regarding the MCR/ACR content and the requirements for an accompanying compliance matrix are described below.

INVESTIGATION REQUESTS AND COMPLAINT PROCEDURES

Any person may file a Request for Investigation alleging noncompliance with the conditions of certification, Energy Commission regulations, or orders. Such a request shall be filed with and reviewed by the Executive Director. The provisions setting forth the Request for Investigation process can be found in Title 20, California Code of Regulations, sections 1230 through 1232.5. The Request for Investigation may result in the Executive Director bringing a complaint against the alleged violator under section 1233 and seeking administrative penalties. The California Office of Administrative Law provides on-line access to the California Code of Regulations at http://www.oal.ca.gov/.

INFORMAL RESOLUTION PROCESS

Issues related to the construction or operation of a licensed facility should be directed to the CPM who will act as the point person in working with the public and project owner to resolve these concerns. The CPM can initiate meetings with stakeholders, investigate the facts surrounding the issues, obtain information from the facility owner, coordinate staff review of documents and information, issue reports, and facilitate solutions to issues related to the construction and operation of the facility.

Contacting the CPM seeking an informal resolution may precede the formal Request for Investigation procedure specified in Title 20, California Code of Regulations, section 1231, but is not intended to be a prerequisite or requirement to utilizing the Request for Investigation process. The informal resolution process encourages all parties to openly discuss the conflict and reach a mutually agreeable solution.

Request for Informal Investigation

Any person or agency may request that the CPM conduct an informal investigation of alleged noncompliance with the Energy Commission's conditions of certification. Upon receipt of an informal investigation request, the CPM will promptly provide both verbal and written notification to the project owner of the allegation(s), along with all known and relevant information of the alleged noncompliance. The CPM will evaluate the request and may work to informally resolve a dispute between the parties, or if the CPM determines that further investigation is necessary, will ask the project owner to promptly conduct a formal inquiry into the matter and provide a written report of the investigation results within seven days, along with corrective measures proposed or undertaken. Depending on the urgency of the matter, the CPM may conduct a site visit and/or request that the project owner provide an initial verbal report within 48 hours.

Request for Informal Meeting

In the event that either the requesting party or Energy Commission staff are not satisfied with the project owner's investigative report or corrective measures, either party may submit a written request to the CPM for a meeting with the project owner. The request shall be made within fourteen days of the project owner's filing of the required investigative report. Upon receipt of such a request, the CPM will attempt to:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary; and

3. conduct the meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner.

After the meeting, the CPM will promptly prepare and distribute copies to all parties, and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If no agreement was reached, the CPM will direct the complainant to the formal complaint process provided under Title 20, California Code of Regulations, section 1231.

POST-CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, to amend the Final Commission Decision in order to modify the design, operation, or performance requirements of the project and/or the linear facilities, or to transfer ownership or operational control of the facility. It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769, and the CPM will determine whether staff approval will be sufficient, or whether Energy Commission approval will be necessary.

A project owner is required to submit a $5,000 fee for every Petition to Amend the license for a previously certified facility, pursuant to Public Resources Code section 25806 (e). If the actual amendment processing costs exceed $5,000, the total PTA reimbursement fees owed by a project owner will not exceed the maximum filing fee for an AFC, which is $750,000, adjusted annually. Current amounts for PTA fees are available at http://www.energy.ca.gov/siting/filing_fees.html. Implementation of a project modification without first securing Energy Commission approval may result in an enforcement action including civil penalties in accordance with Public Resources Code, section 25534.

Below is a summary of the criteria for determining the type of approval process required, reflecting the provisions of Title 20, California Code of Regulations, section 1769, at the time this compliance plan was drafted. If the Energy Commission modifies this regulation, the language in effect at the time of the requested change shall apply. Upon request, the CPM can provide sample formats of these submittals.

AMENDMENT

The project owner shall submit a Petition to Amend the Energy Commission Decision, pursuant to Title 20, California Code of Regulations, section 1769 (a), when proposing modifications to the design, operation, or performance requirements of the project and/or the linear facilities. If a proposed modification results in an added, changed, or deleted condition of certification, or makes changes causing noncompliance with any applicable LORS, the petition will be processed as a formal amendment to the Decision, and must be approved by the full Energy Commission.

CHANGE OF OWNERSHIP AND/OR OPERATIONAL CONTROL

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Energy Commission, but does not require submittal of an amendment processing fee.

STAFF-APPROVED PROJECT MODIFICATION

Modifications that do not result in additions, deletions, or changes to the conditions of certification, that are compliant with the applicable LORS, and for which staff determines there is no possibility of a significant environmental impact may be authorized by the CPM as a staff-approved project modification pursuant to section 1769 (a)(2). Once the CPM files a Notice of Determination of the proposed project modifications, any person may file an objection to the CPM's determination within fourteen days of service on the grounds that the modification does not meet the criteria of section 1769 (a)(2). If there is a valid objection to the CPM's determination, the petition must be processed as a formal amendment to the Decision and must be considered for approval by the full Energy Commission at a publically noticed Business Meeting or hearing.

VERIFICATION CHANGE

Pursuant to section 1770 (d), a verification may be modified by the CPM, after giving notice to the project owner, if the change does not conflict with any condition of certification.

EMERGENCY RESPONSE CONTINGENCY PLANNING AND INCIDENT REPORTING

To protect public health and safety and environmental quality, the conditions of certification include contingency planning and incident reporting requirements to ensure compliance with necessary health and safety practices. A well-drafted contingency plan avoids or limits potential hazards and impacts resulting from serious incidents involving personal injury, hazardous spills, flood, fire, explosions or other catastrophic events and ensures a comprehensive timely response. All such incidents must be reported immediately to the CPM and documented. These requirements are designed to protect the public, build from “lessons learned,” limit the hazards and impacts, anticipate and prevent recurrence, and provide for the safe and secure shutdown and restart of the facility.

FACILITY CLOSURE

The Energy Commission cannot reasonably foresee all potential circumstances in existence when a facility permanently closes. Therefore, the closure conditions provided herein strive for the flexibility to address circumstances that may exist at some future time. Most importantly, facility closure must be consistent with all applicable Energy Commission conditions of certification and the LORS in effect at that time.

Prior to submittal of the facility’s Final Closure Plan to the Energy Commission, the project owner and the CPM will hold a meeting to discuss the specific contents of the plan. In the event that significant issues are associated with the plan's approval, the CPM will hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

With the exception of measures to eliminate any immediate threats to public health and safety or to the environment, facility closure activities cannot be initiated until the Energy Commission approves the Final Closure Plan and Cost Estimate, and the project owner complies with any requirements the Energy Commission may incorporate as conditions of approval of the Final Closure Plan.

COMPLIANCE CONDITIONS OF CERTIFICATION

Compliance Table 1:
Summary of Compliance Conditions of Certification

Condition Number	Subject	Description
COM-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COM-2	Compliance Record	The project owner shall maintain project files on-site or at an alternative site approved by the CPM. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COM-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, regardless of whether the conditions were satisfied directly by the project owner or by an agent.
COM-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until all of the following activities/submittals have been completed: • Project owner has submitted a pre-construction matrix identifying conditions to be fulfilled before the start of construction; • Project owner has completed all pre-construction conditions to the CPM's satisfaction; and • CPM has issued a letter to the project owner authorizing construction.
COM-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each Monthly and Annual Compliance Report, which includes the current status of all Compliance conditions of certification.
COM-6	Monthly Compliance Reports and Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due one month following the docketing of the Energy Commission's Decision on the project and shall include an initial list of dates for each of the events identified on the Key Events List.
COM-7	Periodic and Annual Compliance Reports	After construction ends**,** and throughout the life of the project, the project owner shall submit Annual Compliance Reports (ACRs) instead of MCR's.
COM-8	Confidential Information	Any information the project owner designates as confidential shall be submitted to the Energy Commission's Executive Director with a request for confidentiality.
COM-9	Annual Fees	Required payment of the Annual Energy Facility Compliance Fee.
COM-10	Amendments, Staff-Approved Project Modifications, Ownership Changes, and Verification Changes	The project owner shall petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements, and/or transfer ownership or operational control of the facility. Petitions to Amend require the payment of amendment processing fees.
COM-11	Reporting of Complaints, Notices, and Citations	Prior to the start of construction, the project owner shall provide all property owners within a one mile radius a telephone number to contact project representatives with questions, complaints, or concerns. The project owner shall respond to all recorded complaints within 24 hours. Within five days of receipt, the project owner shall report to the CPM all notices, complaints, violations, and citations.

Condition Number	Subject	Description
COM-12	Site Contingency Plan	No less than 60 days prior to the start of commercial operation, the project owner shall submit an on-site Contingency Plan to ensure protection of public health and safety and environmental quality during a response to an emergency.
COM-13	Incident-Reporting Requirements	The project owner shall notify the CPM within one hour of an incident and submit a detailed incident report within one week, maintain records of incident report, and submit public health and safety documents with employee training provisions.
COM-14	Non-Operation	No later than two weeks prior to a facility's planned non-operation, or no later than one week after the start of unplanned non-operation, the project owner shall notify the CPM, interested agencies and nearby property owners of this status. During non-operation, the project owner shall provide written updates to the CPM.
COM-15	Facility Closure Planning	No less than one year prior to planned permanent closure, or upon an order compelling permanent closure, the project owner shall submit a Final Closure Plan and Cost Estimate.

COM-1 **Unrestricted Access**. The project owner shall take all steps necessary to ensure that the CPM, responsible Energy Commission staff, and delegate agencies or consultants have unrestricted access to the facility site, related facilities, project-related staff, and the records maintained on site for the purpose of conducting audits, surveys, inspections, or general or closure-related 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, whether such visits are by the CPM in person or through representatives from Energy Commission staff, delegated agencies, or consultants.

COM-2 **Compliance Record**. The project owner shall maintain electronic copies of all project files and submittals on site, or at an alternative site approved by the CPM, for the operational life and closure of the project. The files shall also contain at least one hard copy of:

1. the facility's Application for Certification;
2. all amendment petitions and Energy Commission orders;
3. all site-related environmental impact and survey documentation;
4. all appraisals, assessments, and studies for the project;
5. all finalized original and amended structural plans and "as-built" drawings for the entire project;

6. all citations, warnings, violations, or corrective actions applicable to the project, and

7. the most current versions of any plans, manuals, and training documentation required by the conditions of certification or applicable LORS.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

COM-3: Compliance Verification Submittals. Verification lead times associated with the start of construction may require the project owner to file submittals during the amendment process, particularly if construction is planned to commence shortly after certification. The verification procedures, unlike the conditions, may be modified as necessary by the CPM after notice to the project owner.

A cover letter from the project owner or an authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. The cover letter subject line shall identify the project by AFC number, cite the appropriate condition of certification number(s), and give a brief description of the subject of the submittal. When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and the condition(s) of certification applicable.

All reports and plans required by the project's conditions of certification shall be submitted in a searchable electronic format (.pdf, MS Word or Excel, etc.) and include standard formatting elements such as a table of contents identifying by title and page number each section, table, graphic, exhibit, or addendum. All report and/or plan graphics and maps shall be adequately scaled and shall include a key with descriptive labels, directional headings, a bar scale, and the most recent revision date.

The project owner is responsible for the content and delivery of all verification submittals to the CPM, the actions required by the verification were satisfied by the project owner or an agent of the project owner. All submittals shall be accompanied by an electronic copy on an electronic storage medium, or by email, as agreed upon by the CPM. If hard copy submittals are required, please address as follows:

Compliance Project Manager
Mission Rock Energy Center (15-AFC-02C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

COM-4 Pre-Construction Matrix and Tasks Prior to Start of Construction. Prior to construction, the project owner shall submit to the CPM a compliance matrix including only those conditions that must be fulfilled before the start of construction.

The matrix shall be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first, and shall be submitted in a format similar to the description below.

Site mobilization and construction activities shall not start until the following have occurred:

1. the project owner has submitted the pre-construction matrix and all compliance verifications pertaining to pre-construction conditions of certification; and

2. the CPM has issued an authorization-to-construct letter to the project owner.

The deadlines for submitting various compliance verifications to the CPM allow staff sufficient time to review and comment on, and, if necessary, also allow the project owner to revise the submittal in a timely manner. These procedures help ensure that project construction proceeds according to schedule. Failure to submit required compliance documents by the specified deadlines may result in delayed authorizations to commence various stages of the project.

If the project owner anticipates site mobilization immediately following project certification, it may be necessary for the project owner to file compliance submittals prior to project certification. In these instances, compliance verifications can be submitted in advance of the required deadlines and the anticipated authorizations to start construction. The project owner must understand that submitting items required in compliance verifications prior to these authorizations is at the owner's own risk. Any approval by Energy Commission staff prior to project certification is subject to change based upon the Commission Decision, or amendment thereto, and early staff compliance approvals do not imply that the Energy Commission will certify the project for actual construction and operation.

COM-5 **Compliance Matrix**. The project owner shall submit a compliance matrix to the CPM with each MCR and ACR. The compliance matrix shall identify:

1. the technical area (e.g., biological resources, facility design, etc.);

2. the condition number;

3. a brief description of the verification action or submittal required by the condition;

4. the date the submittal is required (e.g., (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 Delegate Chief Building Official (DCBO), CPM, or delegate agency, if applicable;

7. the compliance status of each condition (e.g., “not started,” “in progress” or “completed” (include the date); and

8. if the condition was amended, the updated language and the date the amendment was proposed or approved.

The CPM can provide a template for the compliance matrix upon request.

COM-6 **Monthly Compliance Report (MCR)** The first MCR is due one month following the docketing of the project’s Decision unless otherwise agreed to by the CPM. The first MCR shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List. (The Key Events List form is found at the end of this **Compliance Conditions and Compliance Monitoring Plan** section.)

During pre-construction, construction, or closure, the project owner or authorized agent shall submit an electronic searchable version of the MCR to the CPM within 10 business days after the end of each reporting month. MCRs shall be submitted each month until construction is complete and the final certificate of occupancy is issued by the DCBO. MCRs shall be clearly identified for the month being reported. The MCR shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;

2. documents required by specific conditions to be submitted along with the MCR. Each of these items shall be identified in the transmittal letter, as well as the conditions they satisfy, and submitted as attachments to the MCR;

3. an initial, and thereafter updated, compliance matrix showing the status of all conditions of certification;

4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;

5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;

6. a cumulative listing of any approved changes to conditions of certification;

7. a listing of any filings submitted to, and permits issued by, other governmental agencies during the month;

8. a projection of project compliance activities scheduled during the next two months; the project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;

9. a listing of the month's additions to the on-site compliance file; and

10. a listing of incidents, complaints, notices of violation, official warnings, and citations received during the month; a list of any incidents that occurred during the month, a description of the actions taken to date to resolve the issues; and the status of any unresolved actions noted in the previous MCRs.

COM-7 **Periodic and Annual Compliance Reports**. After construction is complete, the project must submit searchable electronic ACRs to the CPM, as well as other periodic compliance reports (PCRs) required by the various technical disciplines. ACRs shall be completed for each year of commercial operation and are due each year on a date agreed to by the CPM. Other PCRs (e.g. quarterly reports or decommissioning reports to monitor closure compliance), may be specified by the CPM. The searchable electronic copies may be filed on an electronic storage medium or by email, subject to CPM approval. Each ACR must include the AFC number, identify the reporting period, and contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. documents required by specific conditions to be submitted along with the ACR; each of these items shall be identified in the transmittal letter with the condition(s) it satisfies, and submitted as an attachments to the ACR;

4. a cumulative list of all post-certification changes approved by the Energy Commission or the CPM;

5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. a 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 Site Contingency Plan, including amendments and plan updates; and

10. a listing of complaints, incidents, notices of violation, official warnings, and citations received during the year, a description of how the issues were resolved, and the status of any unresolved complaints.

COM-8 **Confidential Information.** Any information that the project owner designates as confidential shall be submitted to the Energy Commission's Executive Director with an application for confidentiality, pursuant to Title 20, California Code of Regulations, section 2505 (a). Any information deemed confidential pursuant to the regulations will remain undisclosed, as provided in Title 20, California Code of Regulations, section 2501 *et seq*.

COM-9 **Annual Energy Facility Compliance Fee**. Pursuant to the provisions of section 25806 (b) of the Public Resources Code, the project owner is required to pay an annually adjusted compliance fee. Current compliance fee information is available on the Energy Commission's website at http://www.energy.ca.gov/siting/filing_fees.html. The project owner may also contact the CPM for the current fee information. The initial payment is due on the date the Energy Commission dockets its final Decision. All subsequent payments are due by July 1 of each year in which the facility retains its certification.

COM-10 **Amendments, Staff-Approved Project Modifications, Ownership Changes, and Verification Changes**. The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to modify the design, operation, or performance requirements of the project or linear facilities, or to transfer ownership or operational control of the facility. The CPM will determine whether staff approval will be sufficient, or whether Commission approval will be necessary. It is the project owner's responsibility to contact the CPM to determine if a proposed project change triggers the requirements of section 1769. Section 1769 details the required contents for a Petition to Amend an Energy Commission Decision. The only change that can be requested by means of a letter to the CPM is a request to change the verification method of a condition of certification.

A project owner is required to submit a $5,000 fee for every petition to amend a previously certified facility, pursuant to Public Resources Code section 25806 (e). If the actual amendment processing costs exceed $5,000, the total Petition to Amend reimbursement fees owed by a project owner will not exceed $750,000, adjusted annually. Current amendment fee information is available on the Energy Commission's website at http://www.energy.ca.gov/siting/filing_fees.html.

COM-11 Reporting of Complaints, Notices, and Citations. Prior to the start of construction or closure, the project owner shall send a letter to property owners 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 must include automatic answering with date and time stamp recording.

The project owner shall respond to all recorded complaints within 24 hours or the next business day. The project site shall post the telephone number on-site and make it easily visible to passersby during construction, operation, and closure. The project owner shall provide the contact information to the CPM and promptly report any disruption to the contact system or telephone number change to the CPM, who will provide it to any persons contacting him or her with a complaint.

Within five business days of receipt, the project owner shall report, and provide copies to the CPM, of all complaints, including, but not limited to, noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the [1]**Noise and Vibration** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A) at the end of this Compliance Plan. Additionally, the project owner must include in the next subsequent MCR, ACR or PCR, copies of all complaints, notices, warnings, citations and fines, a description of how the issues were resolved, and the status of any unresolved or ongoing matters.

COM-12 Emergency Response Site Contingency Plan. No less than 60 days prior to the start of construction (or other CPM-approved date) the project owner shall submit, for CPM review and approval, an Emergency Response Site Contingency Plan (Contingency Plan). Subsequently, no less than 60 days prior to the start of commercial operation, the project owner shall update (as necessary) and resubmit the Contingency Plan for CPM review and approval. The Contingency Plan shall evidence a facility's coordinated emergency response and recovery preparedness for a series of reasonably foreseeable emergency events. The CPM may require Contingency Plan updating over the life of the facility. Contingency Plan elements include, but are not limited to:

1. a site-specific list and direct contact information for persons, agencies, and responders to be notified for an unanticipated event;

2. a detailed and labeled facility map, including all fences and gates, the windsock location (if applicable), the on and off-site assembly areas, and the main roads and highways near the site;

[1] The CPM needs to cross-check this with the Final Decision.

3. a detailed and labeled map of population centers, sensitive receptors, and the nearest emergency response facilities;

4. a description of the on-site first response, and backup emergency alert and communication systems, site-specific emergency response protocols, and procedures for maintaining the facility's contingency response capabilities, including a detailed map of interior and exterior evacuation routes, and the planned location(s) of all permanent safety equipment;

5. an organizational chart including the name, contact information, and first aid/emergency response certification(s) and renewal date(s) for all personnel regularly on-site;

6. a brief description of reasonably foreseeable, site-specific incidents and accident sequences (on and off-site), including response procedures and protocols and site security measures to maintain 24-hour site security;

7. procedures for maintaining contingency response capabilities; and

8. the procedures and implementation sequence for the safe and secure shutdown of all non-critical equipment and removal of hazardous materials and waste (see also specific conditions of certification for the technical areas of **Public Health, Waste Management, Hazardous Materials Management, and Worker Safety).**

COM-13 Incident-Reporting Requirements. The project owner shall notify the CPM within one hour after it is safe and feasible of any incident at the facility that results in any of the following:

1. An event of any kind that causes a "Forced Outage" as defined in the CAISO tariff;

2. The activation of onsite emergency fire suppression equipment to combat a fire;

3. Any chemical, gas, or hazardous materials release that could result in potential health impacts to the surrounding population, or create an off-site odor issue; and /or

4. Notification to, or response by, any off-site emergency response federal, state or local agency regarding a fire, hazardous materials release, on-site injury, or any physical or cyber security incident.

Notification shall describe the circumstances, status, and expected duration of the incident. If warranted, as soon as it is safe and feasible, the project owner shall implement the safe shutdown of any non-critical equipment and removal of any hazardous materials and waste that pose a threat to public health and

safety and to environmental quality (also, see specific conditions of certification for the technical areas of **Hazardous Materials Management and Waste Management**).

Within six business days of the incident, the project owner shall submit to the CPM a detailed incident report, which includes, as appropriate, the following information:

1. A brief description of the incident, including its date, time, and location;
2. A description of the cause of the incident, or likely causes if it is still under investigation;
3. The location of any off-site impacts;
4. Description of any resultant impacts;
5. A description of emergency response actions associated with the incident;
6. Identification of responding agencies;
7. Identification of emergency notifications made to federal, state, and/or local agencies;
8. Identification of any hazardous materials released and an estimate of the quantity released;
9. A description of any injuries, fatalities, or property damage that occurred as a result of the incident;
10. Fines or violations assessed or being processed by other agencies;
11. Name, phone number, and email address of the appropriate facility contact person having knowledge of the event; and
12. Corrective actions to prevent a recurrence of the incident.

The project owner shall maintain all incident report records for the life of the project, including closure. After the submittal of the initial report for any incident, the project owner shall submit to the CPM copies of incident reports within 48 hours of a request. If the project owner requests that an incident notification or report be designated as a confidential record and not publicly disclosed, the project owner shall submit copies of notices or reports with an application for confidential designation in accordance with California Energy Commission regulations.

COM-14 Non-Operation and Repair/Restoration Plans. (a.) If the facility ceases operation temporarily (excluding planned and unplanned maintenance for longer than one week (or other CPM-approved date), but less than three months (or other CPM-approved date), the project owner shall notify the CPM. Notice of planned non-operation shall be given at least two weeks prior to the scheduled date. Notice of unplanned non-operation shall be provided no later than one week after non-operation begins.

For any non-operation, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one week after notice of non-operation is given. If non-operation is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken before the Repair/Restoration Plan is submitted. The Repair/Restoration Plan shall include:

1. Identification of operational and non-operational components of the plant;

2. A detailed description of the repair and inspection or restoration activities;

3. A proposed schedule for completing the repair and inspection or restoration activities;

4. An assessment of whether or not the proposed activities would require changing, adding, and/or deleting any conditions of certification, and/or would cause noncompliance with any applicable LORS; and

5. Planned activities during non-operation, including any measures to ensure continued compliance with all conditions of certification and LORS.

(b.) Written monthly updates (or other CPM-approved intervals) to the CPM for non-operational periods, until operation resumes, shall include:

1. Progress relative to the schedule;

2. Developments that delayed or advanced progress or that may delay or advance future progress;

3. Any public, agency, or media comments or complaints; and

4. Projected date for the resumption of operation.

(c.) During non-operation, all applicable conditions of certification and reporting requirements remain in effect. If, after one year from the date of the project owner's last report of productive Repair/Restoration Plan work, the facility does not resume operation or does not provide a plan to resume operation, the Executive Director may assign

suspended status to the facility and recommend commencement of permanent closure activities. Within 90 days of the Executive Director's determination, the project owner shall do one of the following:

1. If the facility has a closure plan, the project owner shall update it and submit it for Energy Commission review and approval; or

2. If the facility does not have a closure plan, the project owner shall develop one consistent with the requirements in this Compliance Plan and submit it for Energy Commission review and approval.

COM-15: **Facility Closure Planning**. To ensure that a facility's eventual permanent closure and maintenance do not pose a threat to public health and safety and/or to environmental quality, the project owner shall coordinate with the Energy Commission to plan and prepare for eventual permanent closure.

Final Closure Plan and Cost Estimate

(a) No less than one year (or other CPM-approved date) prior to initiating a permanent facility closure, or upon an order compelling permanent closure, the project owner shall submit for Energy Commission review and approval, a Final Closure Plan and Cost Estimate, which includes any site maintenance and monitoring.

Prior to submittal of the facility's Final Closure Plan to the Energy Commission, the project owner and the CPM will hold a meeting to discuss the specific contents of the plan. In the event that significant issues are associated with the plan's approval, the CPM will hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

(b.) Final Closure Plan and Cost Estimate contents include, but are not limited to:

1. a statement of specific Final Closure Plan objectives;

2. a statement of qualifications and resumes of the technical experts proposed to conduct the closure activities, with detailed descriptions of previous power plant closure experience;

3. identification of any facility-related installations or maintenance agreements not part of the Energy Commission certification, designation of who is responsible for these, and an explanation of what will be done with them after closure;

4. a comprehensive scope of work and itemized budget for permanent plant closure and site maintenance activities, with a description and explanation of methods to be used, broken down by phases, including, but not limited to:

a. dismantling and demolition;

b. recycling and site clean-up;

c. impact mitigation and monitoring;

d. site remediation and/or restoration;

e. exterior maintenance, including paint, landscaping and fencing;

f. site security and lighting; and

g. any contingencies.

5. a final cost estimate for all closure activities, by phases, including site monitoring and maintenance costs, and long-term equipment replacement;

6. a schedule projecting all phases of closure activities for the power plant site and all appurtenances constructed as part of the Energy Commission-certified project;

7. an electronic submittal package of all relevant plans, drawings, risk assessments, and maintenance schedules and/or reports, including an above-ground and below-ground infrastructure inventory map and registered engineer's or DCBO's assessment of demolishing the facility; additionally, for any facility that permanently ceased operation prior to submitting a Final Closure Plan and Cost Estimate and for which only minimal or no maintenance has been done since, a comprehensive condition report focused on identifying potential hazards;

8. all information additionally required by the facility's conditions of certification applicable to plant closure;

9. an equipment disposition plan, including:

a. recycling and disposal methods for equipment and materials; and

b. identification and justification for any equipment and materials that will remain on site after closure.

10. a site disposition plan, including but not limited to:

a. proposed rehabilitation, restoration, and/or remediation procedures, as required by the conditions of certification and applicable LORS, and site maintenance activities.

11. identification and assessment of all potential direct, indirect, and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a less-than-significant level. Potential impacts to be considered shall include, but not be limited to:

    a. traffic;

    b. noise and vibration;

    c. soil erosion;

    d. air quality degradation;

    e. solid waste;

    f. hazardous materials;

    g. waste water discharges; and

    h. contaminated soil.

12. identification of all current conditions of certification, LORS, federal, state, regional, and local planning efforts applicable to the facility, and proposed strategies for achieving and maintaining compliance during closure;

13. updated mailing list and Listserv of all responsible agencies, potentially interested parties, and property owners within one mile of the facility;

14. identification of alternatives to plant closure and assessment of the feasibility and environmental impacts of these; and

15. description of, and schedule for, security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (see conditions of certification **Public Health, Waste Management, Hazardous Materials Management and Worker Safety**).

If the Energy Commission-approved Final Closure Plan and Cost Estimate procedures are not initiated within one year of the plan approval date, it shall be updated and re-submitted to the Energy Commission for supplementary review and approval. If a project owner initiates but then suspends closure activities, and the suspension continues for longer than one year, the Energy Commission may initiate correction actions against the project owner to complete facility closure. The project owner remains liable for all costs of contingency planning and closure.

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
On-line Date	
POWER PLANT SITE ACTIVITIES	
Start Site Assessment/Pre-construction	
Start Site Mobilization/Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start Transmission Line Construction	
Complete Transmission Line Construction	
Synchronization with Grid and Interconnection	
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	
Start Recycled Water Supply Line Construction	
Complete Recycled Water Supply Line Construction	

COMPLAINT LOG NUMBER:_____ DOCKET NUMBER:_____

ATTACHMENT A
COMPLAINT REPORT AND RESOLUTION FORM

PROJECT NAME: _____

COMPLAINANT INFORMATION

NAME: _____ PHONE NUMBER: _____

ADDRESS: _____

COMPLAINT

DATE COMPLAINT RECEIVED: _____ TIME COMPLAINT RECEIVED: _____

COMPLAINT RECEIVED BY: _____ ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE: _____

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION): _____

_____

_____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL: _____

_____

_____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS: _____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION: _____

_____

_____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN: _____

_____

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED: _____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED): _____

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED): _____

OTHER RELEVANT INFORMATION: _____

_____

_____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE: _____ DATE: _____

(ATTACH ADDITIONAL PAGES AND ALL SUPPORTING PHOTO/DOCUMENTATION, AS REQUIRED)

MISSION ROCK ENERGY CENTER (15-AFC-02)
PRELIMINARY STAFF ASSESSMENT

PREPARATION TEAM

Executive Summary ..... Mike Monasmith

Introduction ..... Mike Monasmith

Project Description ..... Mike Monasmith

Environmental Assessment

Air Quality ..... Joseph Hughes/ David Vidaver

Alternatives ..... Jeanine Hinde / Lisa Worral

Biological Resources ..... Andrea Stroud

Cultural Resources ..... Sean deCourcy / Mathew Braun

Environmental Justice ..... Lisa Worrall / Mike Monasmith

Hazardous Materials Management ..... Alvin Greenburg,PH.D

Land Use ..... Lisa Worral

Noise and Vibration ..... Christopher Dennis / Shahab Khoshmashrab

Public Health ..... Obed Odoemelam PH,D

Socioeconomics ..... Lisa Worrall

Soil and Water Resources ..... Marylou Taylor

Traffic and Transportation ..... Scott Polaske / J. Fong / A. Koch

Transmission Line Safety and Nuisance ..... Obed Odoemelam, PH.D

Visual Resources ..... William Kanemoto

Engineering Assessment

Facility Design ..... Shahab Khoshmashrab / Edward Brady

Geology and Paleontology ..... Garry Maurath, PHD, PG-CHg

Power Plant Efficiency ..... Edward Brady / Shahab Khoshmashrab

Power Plant Reliability ..... Edward Brady / Shahab Khoshmashrab

Transmission System Engineering ..... Liaping Ng / Mark Hesters

Waste Management ..... Obed Odoemelam PH.D

Worker Safety and Fire Protection ..... Alvin J. Greenburg, Ph.D

Compliance Conditions and Compliance Monitoring Plan ..... Mary Dyas

Project Assistant ..... Raquel Rodriguez / Alicia Campos