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STANTON ENERGY RELIABILITY CENTER

Final Staff Assessment

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CALIFORNIA
ENERGY COMMISSION
Edmund G. Brown, Jr, Governor

DOCKET NUMBER 16-AFC-01

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John Heiser, AICP

INTRODUCTION

On October 26, 2016, Stanton Energy Reliability Center, LLC (SERC, LLC), (applicant) filed an application for certification (16-AFC-01) to construct and operate an electrical reliability and generating facility in the city of Stanton, California. As proposed, the Stanton Energy Reliability Center (Stanton or project) would be located at 10711 Dale Avenue, situated on two parcels with a combined area of 3.978 acres. The facility would consist of two Hybrid EGT™ General Electric LM6000-based Electric Gas Turbines. (Hybrid EGT™ refers to the LM6000 PC Hybrid EGT jointly developed by General Electric International, Inc. (GE) and Wellhead Power Solutions.) The EGT combines a combustion gas turbine with a 10 megawatt (MW) integrated battery storage component operated by a proprietary software system. Stanton would also feature technology that allows the facility to provide synchronous condensing capabilities for voltage support to the electrical grid when needed. In total, Stanton would provide 98 MW of net generation capacity. The battery storage system would allow the facility to provide reactive power and grid support without the combustion turbine generators (CTGs) operating simultaneously. The battery systems would provide an instantaneous response, allowing the CTGs to start-up and come up to speed to then provide grid support and energy. It is not anticipated that the batteries and CTGs would both be on-line at the same time.

This Final Staff Assessment (FSA) contains California Energy Commission staff's independent and objective evaluation of the proposed Stanton Energy Reliability Center project. The FSA examines engineering, environmental, public health and safety, and environmental justice aspects of the proposed project, based on the information provided by the applicant, government agencies, interested parties, independent research, and other sources available at the time the FSA was prepared. The FSA contains analyses similar to those normally contained in a Final 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 MW or greater falls under the regulatory oversight of the California Energy Commission (Pub. Resources Code, § 25500 et seq.). The Energy Commission is the lead agency under CEQA and 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 Energy Commission staff's active coordination with other regulatory agencies and incorporation of their findings, such as the South Coast Air Quality Management District and its Final Determination of Compliance. The result of staff's research, collaboration, and comprehensive process of discovery and analysis are recommendations for mitigation requirements (proposed conditions of certification) to reduce to less than significant any adverse environmental

effects resulting from the proposed project and to ensure project compliance with applicable LORS.

Staff 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 (see **Executive Summary Table 1**).

ENERGY COMMISSION SITING PROCESS

This FSA 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.

Staff has incorporated responses to comments received on the Preliminary Staff Assessment and other information needed to finish its analysis to draw conclusions and make recommendations about the project in this Final Staff Assessment. During evidentiary hearings to be held by an assigned Committee of two Energy Commissioners (Commissioner Janea Scott the Presiding Member, and Commissioner Karen Douglas the Associate Member), the FSA will serve as staff's testimony. During evidentiary hearings, the FSA will be entered into the record, along with public comment, input from staff, the applicant, intervenors, and governmental agencies. The Committee will then engage in deliberation and review of the record before writing and submitting the Presiding Member's Proposed Decision (PMPD) for a 30-day public comment period and then to the full Energy Commission for consideration and action. Following a public hearing, most likely during a monthly business meeting, the full Commission will make a final decision on the Stanton Energy Reliability Center proposal. If approved and constructed, Stanton would provide generation and local reliability services in the Southern California Edison (SCE) West Los Angeles Basin Subarea.

PROPOSED PROJECT LOCATION

The main access to the Stanton site would be via Dale Avenue, between Standustrial Street and Monroe Avenue in the city of Stanton, Orange County, at 10711 Dale Avenue. The Stanton site is located in an area that is zoned Industrial General (City of Stanton, IG). Adjacent land uses surrounding the site include the city of Stanton's industrial area to the north and south, consisting of commercial/industrial warehouse-based business, a public storage facility, an elementary school to the north of the industrial/commercial area, public/quasi-public utility areas to the east, consisting of the SCE Barre peaker power plant and Barre Substation, and high- and medium-density residential uses to the southeast and northwest. Secondary access to the site is from Pacific Street/Fern Avenue east of Beach Road.

APPLICANT'S PROJECT PURPOSE AND OBJECTIVES

As stated by the applicant, Stanton's primary objective is to be a state-of-the-art energy reliability resource. Stanton has been designed to deliver reliability services with a minimal carbon footprint and a low-emissions profile. The project would be one of the first commercial applications of the EGT. Using this technology, Stanton would be able to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology to provide new local capacity and reliability services specifically in the West Los Angeles (LA) Basin local reliability area of SCE's service territory.

Stanton's project objectives are as follows:

- Safely construct and operate an electrical energy reliability facility to meet SCE's need for local capacity in the West LA Basin local reliability area of its service territory.
- Use Wellhead's patented EGT technology to provide the following:
    - Greenhouse gas (GHG)-free operating reserve;
    - Flexible capacity without start time;
    - Peaking energy for local contingencies;
    - Voltage support and primary frequency response without fuel burn;
    - Superior transient response attributable to co-location of gas turbines and battery;
    - Gas turbine management of battery state-of-charge in real time;
- Site the project as near as possible to an SCE substation with available transmission capacity to serve the West LA Basin and minimize the generation tie-line length.
- Site the project in an existing industrial area on a previously disturbed site to minimize environmental impacts.
- Site the project in a community that embraces the project and its new technology.
- Safely construct and operate an electrical energy reliability project that would satisfy the commercial obligations of both Resource Adequacy Purchase Agreements (RAPAs).

SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND MITIGATION

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

Executive Summary Table 1
Environmental and Engineering Assessment

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

ENVIRONMENTAL ASSESSMENT

AIR QUALITY/GREENHOUSE GASES

Staff concludes that with the adoption of the attached conditions of certification, the proposed Stanton Energy Reliability Center would not result in significant air quality related impacts during project construction or operation, and that Stanton would comply with all applicable federal, state, and South Coast Air Quality Management District (SCAQMD or District) air quality LORS and CEQA requirements.

The SCAQMD published a Preliminary Determination of Compliance (PDOC) on February 9, 2018. A Final Determination of Compliance (FDOC) was published on May 2, 2018 and incorporated appropriate changes based on comments received on the PDOC. Compliance with all SCAQMD rules and regulations was evaluated in the FDOC. Per the FDOC, the SCAQMD determined Stanton would comply with applicable LORS.

Staff has assessed the potential for localized impacts and regional impacts for the project's proposed construction, commissioning, and operation. Staff is recommending mitigation and monitoring requirements sufficient to reduce potential adverse construction, commissioning, and operating emission impacts to less than significant.

Staff has considered the potential for adverse air quality impacts to the minority populations surrounding the site. The adoption of the recommended conditions of certification is expected to reduce the project's direct and cumulative air quality impacts to less than significant for all populations, including minority and low-income populations.

Global climate change and GHG emissions from the proposed project are discussed and analyzed in **Air Quality Appendix Air-1**. The project owner expects to operate the proposed gas turbines well below an annualized plant capacity factor of 60 percent. Therefore the proposed plant would not be considered a base load facility and the turbines would not be subject to California's Greenhouse Gas Emission Performance Standard.

BIOLOGICAL RESOURCES

The proposed project site and offsite linear facilities as well as temporary staging and parking areas would be located in areas that have been previously disturbed and are currently either developed or undeveloped with vegetation limited to weedy species and landscaping. Rare plants and special-status wildlife are not expected to occur on the project site, along the linear facility routes, or in temporary staging and parking areas. However, ruderal areas on the site and nearby support common bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code (sections 3503 and 3513). In addition, the proposed project site and the offsite natural gas line route are both bisected by storm channels under the jurisdiction of United States Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife.

Given the proximity of the proposed project to the aforementioned biological resources, construction and associated site clearance as well as operation of the proposed project could result in various direct and indirect effects. Staff concludes that with implementation of proposed conditions of certification, compliance with all applicable LORS would be achieved and direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less than significant levels.

CULTURAL RESOURCES

Staff concludes that the proposed project could result in significant, direct impacts to buried archaeological resources, that could also be tribal cultural resources, and that may qualify as historical or unique archaeological resources under CEQA. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** would ensure that the applicant would be able to respond quickly and effectively in the event that archaeological resources are found buried beneath the project site during construction-related ground disturbance.

Staff's analysis of the proposed project with regard to ethnographic and historic built environment resources concludes that no ethnographic or historic built environment resources are present in the project area of analysis that qualify as historical resources under CEQA. Therefore, no ethnographic or historic built environment resources would be impacted by the construction or operation of the project.

Staff considers environmental justice populations in its analysis of the project. Staff did not identify any Native American environmental justice populations that either reside within 6 miles of the project site or that rely on any subsistence resources that could be impacted by the proposed project.

ENVIRONMENTAL JUSTICE

Staff concludes that construction and operation of the project would not cause significant direct, indirect, or cumulative environmental justice impacts with the inclusion of proposed conditions of certification (see individual technical sections). Staff also concludes that project impacts would not disproportionately affect the environmental justice population.

HAZARDOUS MATERIALS MANAGEMENT

Staff concludes, based on its evaluation of the proposed Stanton project, that with staff's proposed mitigation measures, hazardous materials use at the site would not present a significant risk of impact to the public or the environment. 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., Stanton Energy Reliability Center, LLC would be required to develop a risk management plan. To ensure the adequacy of this plan, staff's proposed conditions of certification require that the risk management plan be submitted for concurrent review by the Orange County Fire Authority (OCFA) and Energy Commission staff. In addition, staff's proposed conditions of certification require compliance project manager (CPM) review and approval of the risk management plan prior to delivery of any bulk hazardous materials to the Stanton project site. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia and site security.

LAND USE

The Stanton project would neither result in, nor contribute substantially to, any significant direct, indirect, or cumulative land use impacts, including disproportionate impacts to an environmental justice population.

The project would be compatible with present and expected land uses and in conformance with applicable land use and planning laws, ordinances, regulations, and standards including the city of Stanton's General Plan and Zoning Code with findings in support of the issuance of a conditional use permit and a variance by the California Energy Commission.

NOISE AND VIBRATION

If built and operated in conformance with the proposed Noise and Vibration conditions of certification, Stanton would comply with all applicable noise and vibration LORS and would produce no significant direct or cumulative adverse noise impacts on people within the project area, including the environmental justice population.

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.

PUBLIC HEALTH

Staff has analyzed the potential human health risks associated with construction and operation of the proposed Stanton project. Staff's analysis of potential health impacts was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population. Staff concludes that no one (including the public, off-site nonresidential workers, recreational users, and the environmental justice population) would experience any acute or chronic cancer or non-cancer effects of health significance during construction and operation of the proposed Stanton project. Therefore, there would be no significant health impacts from the project's toxic air emissions.

SOCIOECONOMICS

Staff concludes that construction and operation of the Stanton 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. Stanton also would not negatively impact acceptable service ratios of the project area's law enforcement services, parks and recreation facilities, 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 population represented in **Environmental Justice Figure 1, Figure 2,** and **Table 3** would be less than significant and would not be disproportionate

SOIL AND WATER RESOURCES

The proposed project could potentially impact soil and water resources. Staff evaluated the potential for Stanton to: cause accelerated water erosion and sedimentation; exacerbate flood conditions in the vicinity of the project; adversely affect surface or groundwater supplies; or degrade surface or groundwater quality. Staff further evaluated if the proposed project would comply with all applicable LORS, and state policies.

The applicant provided revised project drainage, water quality management, and grading plans following the publication of the PSA. The description of the revisions is provided in references SERC 2108e, f, h, k, and m.

Based on the analysis of the information provided in the AFC, staff concludes that there would be adequate water supply and sewer service for the project. There would be no flooding impacts to the project since it is not in a100-year flood zone, however, construction of bridges would require local encroachment permits to ensure flood conditions are not created by the project. Therefore, the project would not result in significant adverse impacts that cannot be avoided or mitigated and would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

TRAFFIC AND TRANSPORTATION

With implementation of staff's proposed Conditions of Certification **TRANS-1** through **TRANS-8**, the proposed Stanton project would not have a substantial adverse effect on traffic and transportation, and would be in conformance with applicable LORS pertaining to traffic and transportation.

TRANSMISSION LINE SAFETY AND NUISANCE

The applicant proposes to build a new underground 0.35-mile, single-circuit 66-kilovolt (kV) transmission line to connect the proposed Stanton project to the area's electric power grid through the existing SCE Barre Substation to the east. According to the applicant, the proposed project's location was chosen in part for its proximity to this substation. This generator-tie line would be routed underground through a mostly industrial area with only a few residences in the immediate vicinity thereby minimizing the potential for residential field exposures which have been of some health concern. Since the line would be operated within the SCE service area, it would be designed, constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable LORS. Staff proposes two conditions of certification to ensure compliance.

VISUAL RESOURCES

Stanton would not have a substantial adverse effect on visual resources, and would be in conformance with applicable LORS pertaining to visual resources, with the effective implementation of the applicant's proposed mitigation measures and staff's proposed conditions of certification. Overall the project, as proposed, would have a less than significant impact on visual resources.

WASTE MANAGEMENT

The purpose of this staff analysis is to assess the issues potentially associated with handling and disposal of the wastes generated from construction and operation of the proposed project and evaluate the adequacy of the applicant's plan for handling these wastes without significant impacts on human health and the 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 LORS, which staff has noted in this analysis. The applicant also discussed these LORS and proposes waste management plans to ensure compliance.

The project would be located on an approximately 4-acre site zoned and used for industrial purposes. It is also surrounded by industrial uses to the north and south with medium-density residential uses to the southeast and northwest. The applicant has identified the expected waste streams in the expected quantities and also discussed the adequacy of available disposal facilities. Staff has evaluated the applicant's proposed plans to comply with LORS and considers it adequate for compliance. Staff has proposed specific conditions of certification to ensure implementation.

WORKER SAFETY AND FIRE PROTECTION

Staff concludes that the 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 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 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 Orange County Fire Authority (OCFA) has stated that its ability to respond to emergency calls would not be significantly impacted by the construction and operation of the Stanton project (OCFA 2016a).

ENGINEERING ASSESSMENT

FACILITY DESIGN

Staff concludes that the design, construction, and eventual closure of the Stanton project and its linear facilities would comply with applicable engineering LORS. The proposed conditions of certification would ensure compliance with these LORS.

GEOLOGY AND PALEONTOLOGY

The Stanton site area can be characterized as an active seismic area. 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. Preliminary geotechnical studies recommend significant foundation improvement be undertaken to mitigate potential impacts to structures from the effects of seismic shaking. 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** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**. This investigation would present standard engineering design requirements for mitigation of strong seismic shaking, liquefaction, and potential excessive settlement due to dynamic compaction.

Fossils have been found within several miles of the project site, where uplift and erosion have exposed older geologic units, particularly the early to middle Pleistocene Palos Verdes Sand. At the site, the surface and near surface material consists of disturbed fill and Quaternary alluvium, both of which have low paleontological potential. However, the actual conditions at depth are unknown and, if paleontological resources were discovered during excavations for 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**.

POWER PLANT EFFICIENCY

Stanton would generate 98 MW (net output[1]) of electricity and would operate at an overall project fuel efficiency of 41 percent lower heating value (LHV[2]) at 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 and synchronous condenser control systems would not impact Stanton'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.

POWER PLANT RELIABILITY

Staff concludes that the Stanton project would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate an equivalent availability factor[4] between 92 and 98 percent. The battery energy storage and synchronous condenser control systems would perform reliably and would not adversely affect project reliability. No conditions of certification are proposed for power plant reliability.

TRANSMISSION SYSTEM ENGINEERING

The proposed project's electric transmission outlet lines and termination are acceptable and would comply with all applicable LORS.

[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 average temperature of 65°F and relative humidity of 72 percent (SERC 2016a, AFC Figure 2.1-3)

[4] Equivalent availability factor is the percentage of time a power plant is available to generate electrical power, and reflects the probability of planned and unplanned (forced) outages.

- The Southern California Edison Generator Interconnection Agreement (GIA) found that Stanton could be reliably connected to the SCE sub-transmission system without any additional facilities beyond those needed for the direct interconnection of the proposed project.
- The proposed project would be designed and constructed with adequate reactive power resources to compensate the consumption of Var by the generator step-up transformers, distribution feeders and generator tie-lines and maintain a 0.95 power factor at the plant point of interconnection.

The Stanton project could be reliably interconnected to the SCE sub-transmission network without additional facilities, other than those proposed by the applicant.

PROJECT ALTERNATIVES

In the FSA, staff concludes that the Stanton project's environmental impacts would be reduced to less than significant levels with implementation of recommended conditions of certification and through compliance with applicable LORS. Nonetheless, the alternatives analysis evaluates a reasonable range of potentially feasible alternatives to the project to foster informed decision making and public participation.

Staff reviewed the alternatives analysis contained in the Stanton AFC (SERC 2016). In addition to the no project alternative, the AFC discusses alternative site locations for constructing and operating the project, alternative project design features (including linear routes and water supply source), and various technology alternatives. The information provided in the AFC served as a starting point for staff's evaluation of alternatives. The alternatives further reviewed and considered in the alternatives analysis include three off-site alternatives, a 100-percent battery energy storage alternative, and the no project alternative. The no project alternative presented here evaluated a no-build scenario at the project site.

Off-site alternatives would not meet most of the basic project objectives, were infeasible, were unable to avoid significant environmental impacts, or any combination thereof. The Battery Energy Storage Alternative could contribute to meeting the underlying project purpose and would reduce some environmental impacts, but would not provide an equivalent level of local reliability that the proposed project would. The No Project Alternative would avoid several environmental impacts relating to construction and operation of the proposed project, but it would not attain the project's basic objectives and would not provide electrical system benefits.

CUMULATIVE IMPACTS

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

effects of other current projects, and the effects of probable future projects" (Cal. Code Regs., tit. 14, § 15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

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

DEFINITION OF THE CUMULATIVE PROJECT SCENARIO

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 Stanton Master Cumulative Project List by contacting planning staff with the cities of Anaheim, Buena Park, Cypress, and Stanton. Staff also reviewed proposed project information from other agencies, including California Department of Transportation, the Orange County Transportation Authority, and the CEQANet database to develop a list of 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 FSA 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 FSA 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 Stanton could combine with those of other projects.
- Evaluate the effects of Stanton in combination with past and present (existing) projects within the area of geographic effect defined for each discipline.

- Evaluate the effects of Stanton with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

Executive Summary Table 2
Stanton Energy Reliability Center – Master Cumulative Project List

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
1	PPD780	Construction of a 2,418 square foot fast food restaurant with drive-through	7952 Cerritos Ave. and 10511-10529 Beach Blvd., Stanton	0.39	Tentative Completion - Summer 2017
2	PPD 774	Construction of a four unit condominium project	7921 Second St., Stanton	0.58	Building Plan Check
3	PPD-783	Two new commercial office buildings	10441/10425 Magnolia, Stanton	0.74	Still in entitlement process
4	PPD 777	Construct commercial development including a retail pad building, drive-through restaurant, gas station and a drive through car wash	11382, 11430 and 11462 Beach Blvd., Stanton	0.76	Building Plan Check
5	Relocation and construction of school district central kitchen facility	Relocate District's central kitchen facility from the District Office, located at 501 North Crescent Way, Anaheim, to 2735 West Ball Road, Anaheim, on land currently used as a school athletic field, and construct the new central kitchen facility thereon. Existing central kitchen facility to be converted into a District conference center- only internal changes necessary. New central kitchen facility to consist of a 40,000 sq. ft., two-story facility, with parking areas and loading dock. Four primary components: (1) dry storage, (2) cold storage, (3) production kitchen, and (4) offices and support facilities (e.g., small storage areas, restrooms, and a meeting room). New facility will have capability to produce up to 50,000 meals daily without further expansion.	2735 W. Ball Rd, between S. Dale Ave. and S. Magnolia Ave, Anaheim	0.79	Unknown
6	Ball Road Townhomes-Bonanni, DEV2016-00100	Subdivide and construct a 43-unit single-family attached residential project with 10% affordable units and density bonus incentives	2730 W Ball Rd., Anaheim	0.81	Under Review

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
7	DEV2016-00048	Land use entitlements requested: (1) to reclassify the property from the T (Transition) Zone to the RS-2 (Single-Family Residential) Zone - and, (2) a tentative parcel map to subdivide property into two parcels. Existing building on new parcel 2 would be removed.	807 S. Dale Ave., Anaheim	0.98	Approved
8	PPD 775	Construction of 11 single-family detached units	8101-8111 Catherine Ave., Stanton	1.58	Building Plan Check
9	PPD 766	Five-story mixed use development including outpatient clinic, assisted living facility and restaurant	12282 Beach Blvd., Stanton	1.59	Building Plan Check
10	Lincoln Townhomes DEV2013-00028A	Entitlements requested: (i) a Planning Commission determination of conformance with the Density Bonus Code to construct a 35-unit condominium complex with affordable units and Tier 2 incentives - and, (ii) a tentative tract map to establish a 1-lot, 35 unit attached condominium subdivision.	2726 W Lincoln Ave A,B,C,D, Anaheim	1.68	Under planning review.
11	PPD 779	Construction of a medical office building	12456 Beach Blvd., Stanton	1.73	Construction complete
12	PPD 776	Construction of a 25-unit development, including eight live-work units	8081 Lampson Ave., Stanton	1.75	Building Plan Check
13	Emeritus at Fairwood Manor Expansion DEV2014-00100	Expand an existing assisted living facility.	200 N. Dale Ave., Anaheim	1.84	Under planning review.
14	Westgate	Commercial retail center, 250,000 sq. ft.	Northeast corner of Beach Blvd. and Lincoln Ave., Anaheim	1.86	Approved. Construction estimated 2018.
15	Lincoln Cottages, DEV2016-00043	Entitlements requested to develop 22-unit, three-story attached single-family residential project: (i) reclassify westerly property from C-G (General Commercial) Zone to RM-3 (Multiple Family Residential) Zone; (ii) conditional use permit to allow attached single-family residential development with modified development standards; and (iii) tentative tract map to establish 22-lot residential subdivision.	3319-3321 W Lincoln Ave., Anaheim	2.05	Approved
16	Braille Institute	Demolish existing Braille Institute building and reconstruct new campus with less parking than required by zoning.	527 N. Dale Ave., Anaheim	2.23	Approved

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
17	Parkgate Center, DEV2015-00127	Entitlements requested to permit the development of a 48-unit, three story attached and detached single family residential project: (i) reclassify the subject properties from C-G (General Commercial) Zone to RM-3 (Multiple Family Residential) Zone; (ii) conditional use permit to allow attached single-family residential development with modified development standards; and (iii) tentative tract map to create 48-unit residential subdivision	2301-2331 W Lincoln Ave 114A, Anaheim	2.25	Approved
18	PPD 780	Construct a 4,175 square foot multi-tenant building with drive through	12950 Beach Blvd., Stanton	2.26	Building Plan Check
19	CUP-092-2017	Conditional Use Permit request to operate new 29,010 sq. ft. Smart and Final with an Original Alcoholic Beverage Control Type "21" (Off-Sale, General) License.	10870 Katella Ave. Suite G, Garden Grove	2.57	Entitlements granted
20	CUP-085-2016	Conditional Use Permit (CUP) approval to operate new, approximately 44,007 square foot Gold's Gym, located in the Gardenland Shopping Center.	10870 Katella Ave. Suite A, Garden Grove	2.58	In plan check
21	18-Units on Euclid, DEV2016-00027	Entitlements requested: (i) reclassification of property from Transition (T) zone to Multiple-Family Residential (RM-3) zone; (ii) conditional use permit to construct 18-unit, 3-story condominium project with deviation in development standards; and (iii) tentative tract map for one lot subdivision for condominium purposes.	1525 S Euclid St., Anaheim	2.66	Plan Check
22	Ball and Euclid Plaza, DEV2015-00119	Entitlements requested: (i) conditional use permit for demolition of liquor store building and construction of new drive-through restaurant building within existing shopping center; and, (ii) variance to permit fewer parking spaces than required by Zoning Code.	901-951 S Euclid St, Anaheim	2.75	Approved
23	Hotel Stanford	Ten-story hotel with 150 guest rooms, conference and banquet space and rooftop bar.	7860 Beach Blvd., Buena Park	2.94	Approved May 2016
24	Fairmont Private School, DEV2014-00138	Four-story student dormitory building on the existing Fairmont private school campus	2200 W Sequoia Ave., Anaheim	3.03	Approved

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
25	SP-022-2016, LLA-011-2016, DA-002-2016, CUP-065-2016	Site Plan and Conditional Use approval to construct a four-story, 10-unit, work-live mixed-use development on three separate properties in conjunction with a Lot Line Adjustment to consolidate three properties into one. A Development Agreement is also included.	10641 Garden Grove Blvd., 10661 Garden Grove Blvd., and 10662 Pearl St., Garden Grove	3.26	Entitlements granted
26	Barton Place	Mixed-use Project with two main components: senior residential community and commercial/retail uses along Katella Avenue. Senior residential community to be developed on approx. 28 acres on northern portion of the project site. Commercial/retail improvements to be developed on approx. 5-acre parcel on southern portion of project site.	Northeast corner of Katella Ave. and Enterprise Dr., Cypress	3.50	Approved Final EIR Oct. 2015. Construction anticipated to begin in 2018 with construction period of 34 months.
27	SP-034-2017, TT-17928-2017, DA-005-2017, CUP-097-2017	A request to build two (2) work-live units and fourteen (14) residential units.	11222 Garden Grove Blvd., Garden Grove	3.72	Entitlements granted
28	Beach and Orangethorpe Mixed Use Project (The Source)	Max. development allowed would be 500,000 sq. ft. retail, office, restaurant, hotel, and entertainment complex. Approx. one thousand multi-family residential units, 300-room 277,000 sq. ft. hotel, 355,000 sq. ft. retail, and 4,560 parking stalls. One option would be for one residential unit in Phase 1 to be developed as offices. Would reduce residential by 177 condominiums in Phase 1 with addition of approx. 195,000 sq. ft. office space.	6940 Beach Blvd., Buena Park	3.72	Under construction. Construction in two phases over a three-year period.
29	CUP-095-2017	Construct 8,308 sq. ft. fire station, replace 1,000 sq. ft. community building with 2,000 sq. ft. community building, with associated site improvements at West Haven park in O-S (Open Space) zone.	12252 West St., Garden Grove	4.08	Entitlements granted
30	SP-032-2016	Site Plan approval to construct new approx. 3,000 sq. ft. one-story building, for operation of retail meat market on vacant 13,259 sq. ft. lot with associated improvements, including parking lot and landscaping.	10691 Westminster Ave., Garden Grove	4.14	In plan check

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
31	Anaheim Plaza, DEV2015-00120	580-room, 8-story hotel with 50,000 sq. ft. meeting space; 25,600 sq. ft. restaurant space; 20,188 sq. ft. concierge lounge space; fewer parking spaces than required by the Code; and request to adopt development agreement between the city of Anaheim and Good Hope International for proposed hotel project.	1700 S Harbor Blvd., Anaheim	4.23	Approved
32	La Palma Complex Reservoir Rehabilitation & Pump Station Replacement	Replace deteriorated, metal roof of 4.0 million gallon reservoir with aluminum roof. Install structural support for reservoir, a hypalon liner, a surge tank, a 1000-1200 kilowatt semi-enclosed diesel generator for emergency backup power, piping and 6-ft. high fencing along front setback on West St. Replace pump station and its five pumps (capacity of the largest pump is 2,750 gallon per minute (GPM)) with new pump station with four pumps (two 250 horsepower (hp) at 3800 GPM each and two 125-hp at 1900 GPM for total of 6,250 GPM with largest pump out of service). Demolish existing 3.0 MG reservoir, and existing inactive water production well. Also, remove approx. 10 shrubs/trees of ornamental variety to allow space for turn-around driveway during construction and replacement with new shrubs and trees.	West St and La Palma Ave, Anaheim	4.25	Unknown
33	Harbor Substation	Construct two 45 megavolt-amp transformers and switchgear distribution system. The two new single-story structures to be constructed: structure measuring approx. 180 ft. by 50 ft.; and second structure measuring approx. 90 ft. by 50 ft. The latter surface to house two transformers. Underground 69 kilovolt (kV) and 12 kV transmission and distribution lines to be installed in the rights-of-way at Cerritos Ave., Katella Ave., Hast St., Zeyn Street., Disney Way, Harbor Blvd., Clementine Street., Anaheim Blvd., Manchester Ave., and Ninth St. Subterranean vaults (approx. 8 ft. by 20 ft.) at depths of approx. 9 ft. below grade on Katella Ave., Zeyn St., Anaheim Blvd., Haster St., Disney Wy., Clementine St., and Manchester Ave.	131 W Katella Ave, Anaheim	4.64	February 28, 2017 Design & Construction Award Consideration by City Council, Late Summer 2017 Site Preparation, Fall 2019 Construction Complete

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
34	SP-033-2017	Site Plan approval to construct approx. 4,954 sq. ft. commercial pad building within parking lot of existing multi-tenant shopping center, Harbor Place Center.	13200-13220 Harbor Blvd., Garden Grove	4.67	Entitlements granted
35	Cambria Hotel and Suites, DEV2016-00038	Final site plan to construct 12-story, 352-room hotel, three restaurant tenant spaces and one-level of subterranean parking.	1721 S Manchester Ave., Anaheim	4.73	Approved
36	Hampton Inn and Suites	Four-story hotel with 102 rooms, pool, spa, meeting room, and fitness area.	7307 Artesia Blvd., Buena Park	4.73	Under construction
37	Buena Park Nabisco Mixed Use Project	149 residential condo/townhomes, 100-room 4 -story hotel, and auto dealership.	Northwest corner of Artesia Blvd. and Rostrada Ave., Buena Park	4.76	Townhome construction completion estimated December 2017. Hotel construction completion Fall 2015. Although there is no proposal for development of an auto dealership, construction is estimated in 2017 with opening in 2018.
38	OnBeach Mixed Use Development	Five-story mixed-use development on approximately 2.31-acre former Anaheim General Hospital site. Includes approx. 48,000 sq. ft. medical office, restaurant, and retail uses as well as 60 senior apartments.	5742 Beach Blvd., Buena Park	4.83	Under construction
39	Industrial Building, DEV2016-00056	New 143,000 sq. ft. industrial building.	1710-1730 S Anaheim Blvd., Anaheim	4.86	Plan Check

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
40	La Palma Village, DEV2014-00095	Entitlements requested to permit mixed use project to include 162-unit attached single family residential units with ground floor commercial space: amend General Plan land use designation from Open Space to Mixed Use; amend General Plan Circulation Element to modify circulation maps; reclassify subject properties from General Commercial and Industrial Zones to Mixed Use Overlay Zone; conditional use permit to allow mixed-use development with modified development standards; tentative tract map to create 152-unit residential subdivision; and tentative tract map to create a 10-unit residential subdivision with ground floor commercial space.	1110 N Anaheim Blvd., Anaheim	4.91	Approved
41	GPA-001-2017, PUD-006-2017, SP-028-2017, TT-17927-2017, DA-006-2017	Develop gated small lot subdivision with 70 single-family detached residential units and related street and open space improvements on 9.01 acre site. Project site currently contains church, school, and parking lot. Project includes a proposed sphere of influence change and annexation of 0.901 acres from the city of Orange to the city of Garden Grove. Amend the General Plan Land Use Map and Zoning Map with proposed annexation and modify General Plan Land Use Designation of project site from Civic/Institution to Low Density Residential and adopt Residential Planned Unit Development zoning with Single-Family Residential base zoning for the entire site. A contingent approval of Site Plan and Tentative Tract Map to subdivide proposed 70-unit small lot single-family residential subdivision, with recommendation for City Council approval of Development Agreement with applicant.	12901 Lewis St. and 12921 Lewis St., Garden Grove	5.59	Awaiting city council approval
42	Anaheim Five Coves (Northern Extension) Park Project	Develop 9-acre linear urban nature park extending from Lincoln St. to Fontera St. Project in second phase of existing 14-acre Anaheim Coves Nature Park and is a continuation of that park's 1.5-mile multi-use trail and native-plant greening effort for the area. Urban nature park includes 0.9- mile class 1 permeable asphalt bike	Lincoln Ave and S Rio Vista St , Anaheim	6.99	Construction estimated mid Sept 2017- mid March 2018.

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
		path parallel to stabilized decomposed granite multi-use trail. Park includes demonstration garden/children's education/nature play area and native vegetation and earthen swales for stormwater capture throughout length of park.			
43	Anaheim Station Improvements	Construct a second station track and platform, Americans with Disabilities Act (ADA) improvements, possible expansion of parking.	Metrolink Anaheim Canyon Station, Anaheim	9.10	Environmental study phase. Construction estimated October 2019 to October 2020.
44	Anaheim Sustainability Center	Organic waste-to-energy facility to convert organic waste to biogas. Biogas used to generate renewable electricity for onsite needs and for sale to utility companies, including Anaheim Public Utilities. At buildout, facility would include two anaerobic digester tanks; an administration building; a receiving/processing building with loading bays; an outdoor power generation apparatus; and 15 passenger vehicle parking spaces. Capacity to generate up to 4.5 megawatts (MW) of renewable energy in Phase 1 and up to a total of 9.0 MW in Phase 2.	1300 and 1322 N. Lakeview Ave., Anaheim	10.50	MND July 2016
n/a	Prestressed Concrete Cylinder Pipe Rehabilitation Program	Rehab pre-stressed concrete cylinder pipe portions of five subsurface water distribution pipelines nearing end of service life. The second lower feeder is closest to the city of Stanton. Rehab methods include steel cylinder relining with collapsed pipe, steel pipe slip-lining with non-collapsed pipe, and replacement or new pipe construction. Maintenance and replacement of worn or outdated appurtenant structures (e.g. above-ground air release valves, vacuum valves, manholes, and buried vault structures) to be completed. Individual projects in Metropolitan owned rights-of-way, public roads and open space. Possible acquisition of additional temporary right of way to facilitate construction.	Second Lower Feeder-Rolling Hills, Lomita, Torrance, Los Angeles, Carson, Long Beach, Los Alamitos, Cypress, Buena Park, Anaheim, Placentia, Yorba Linda.	n/a	Second Lower Feeder (1 route out of three routes in Metropolitan Water District of Southern California region) constructed over 10-12 year period and broken up into 10 groups with construction of

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
					each group between each October to June. Construction of 1st group Oct. 2017 to June 2018, 2nd group Oct. 2018 to June 2019, and so on. Section of feeder between Interstate 605 and Interstate 5 broken into two groups, with construction estimated Oct. 2023 to June 2024 and Oct 2024 to June 2025. Construction may be delayed if surveys of the other routes yield pipe requiring repair before other pipe in the second lower feeder route.
n/a	Anaheim Resort Electric Line Extensions Project	Extend underground electric line to connect to existing substation circuit breakers. Approx. 8,000 linear ft. (lf) cable line pulled through existing ductbank, approxim. 11,000 lf installed within new ductbank. New ductbanks require trench generally excavated to depth of 4-10 ft. at	Cerritos Ave, Walnut St, Magic Way, Ninth St, Disney Way, Disneyland Dr., Lewis St, Anaheim	n/a	In construction. Construction started Feb. 2017 with completion

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
		width of approx. 2 ft. Install approx. 2,500-3,000 lf ductbank on Cerritos Ave. and Anaheim Blvd. for future installation of 69 kilovolt line to be installed under future project in mid-2017. Areas of ductbank total approx. 4.25 miles. Install risers and vaults max vault depth = 10 ft. x 8 ft. x 20 ft. long.			estimated Nov. 2018.
n/a	Lincoln Avenue Widening Project (from East Street to Evergreen Street)	Widen approx. 2,700 ft. segment of Lincoln Ave. from four to six-lane divided facility. Remove existing improvements, clearing and grubbing, excavation, place new asphalt concrete pavement, construct concrete curb and gutter, driveways, access ramps, sidewalks, bus pads, drainage system improvements, relocate existing facilities, install traffic signal at Lincoln Avenue and La Plaza intersection, traffic signal modifications, signing, striping, and landscaping. Landscaped medians along Lincoln Ave. and along project roadways include drought-tolerant and low-maintenance plantings and trees.	Lincoln Ave., between East St. and Evergreen St., Anaheim	n/a	Notice of Intent
n/a	Lincoln Avenue Widening Project from West Street to Harbor Boulevard	Widen Lincoln Ave. with additional through lane in each direction from West St. to Harbor Blvd. Dedicated right-turn pocket added on eastbound Lincoln Ave. at intersection with Harbor Blvd., beginning approx. 230 ft. west of intersection. Raised medians added and designated left turn-pockets would be provided at Illinois St., Ohio St., Citron St., Resh St., and Harbor Blvd. intersections. Lengthen existing left-turn pocket on eastbound Lincoln Ave. at Harbor Blvd, to 250 feet to accommodate u-turns. Remove on-street parking within project limits. Bicycles continue to use existing outside lane similar to existing condition. Parkways reconstructed with 5-ft. sidewalks separated from street by a 5-ft. wide curb-adjacent planter strip. New pavement, curbs, gutters, sidewalks, and pedestrian ramps through project area. Two replacement bus pads added eastbound and westbound Lincoln Ave. between Ohio St. and Citron St. Off-site regrading and paving on adjacent private properties required to facilitate joining	Lincoln Ave. between West St. and Harbor Blvd., Anaheim	n/a	Neg Dec for MND published Dec. 2016. Construction estimated to start in 2018 with a 10-month construction period.

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
		of new roadway to adjacent property access driveways. Areas planned for striping and marking improvements included with reconstruction of existing storm drain catch basins and connector pipes. Construct three new catch basins near Illinois St./Lincoln Ave. intersection. Also new 24-inch storm drain constructed in Lincoln Ave. from West St. to Illinois St. to alleviate existing street flooding during rain events. New landscaping in medians and parkways.			
n/a	Rehabilitation of Western Regional Sewers, Project No. 3-64	Rehab and/or replace entire lengths of Orange Western Sub-Trunk, Los Alamitos Sub-trunk, Westside Relief Interceptor, and Seal Beach Blvd interceptor. Complete replacement of the Westside Pump Station wet well and replacement or rehabilitation of existing force main and odor control facilities.	Route along Los Alamitos Blvd., Denni St., and Bloomfield St. Route along Los Alamitos Blvd., Denni St., and Moody St. Route along Orange Ave. and Western Ave. Cities of Cypress, La Palma, Los Alamitos, and Seal Beach and the community of Rossmoore.	n/a	Construction Oct. 2019 to June 2026.
n/a	North Basin Monitoring Well Project	Construct and operate 14 monitoring wells at 8 locations within cities of Anaheim and Fullerton. Northern portion of Orange County Groundwater Basin (North Basin Area) impacted by volatile organic compounds (VOCs) at concentrations well above primary drinking water standards. Predominant VOCs present in the North Basin area are trichloroethylene (TCE), tetrachloroethylene (PCE), 1,1-dichloroethylene (1,1-DCE), and 1,4-dioxane.	Various locations, Fullerton and Anaheim (north of SR-91 and south of Commonwealth Avenue)	n/a	Unknown
n/a	SR-241/SR-91 Tolled Express Lanes Connector Project	Construct median-to-median connector between State Route (SR) 241 and tolled lanes in median of SR-91. Length of project approx. 8.7 miles.	Junction of SR 241 and SR 91, cities of Anaheim, Yorba Linda, and Corona	n/a	Unknown
n/a	Eastbound State Route 22 Safety Improvement Project	Convert collector-distributor road to freeway to freeway direct connector for Interstate 5 (I-5) southbound. Create new freeway to freeway connector from State Route 22 (SR) eastbound to I-5/SR-57 northbound by re-striping	East of Garden Grove Ave. to Devon Rd., cities of Orange, Santa Ana, and Garden Grove	n/a	Unknown

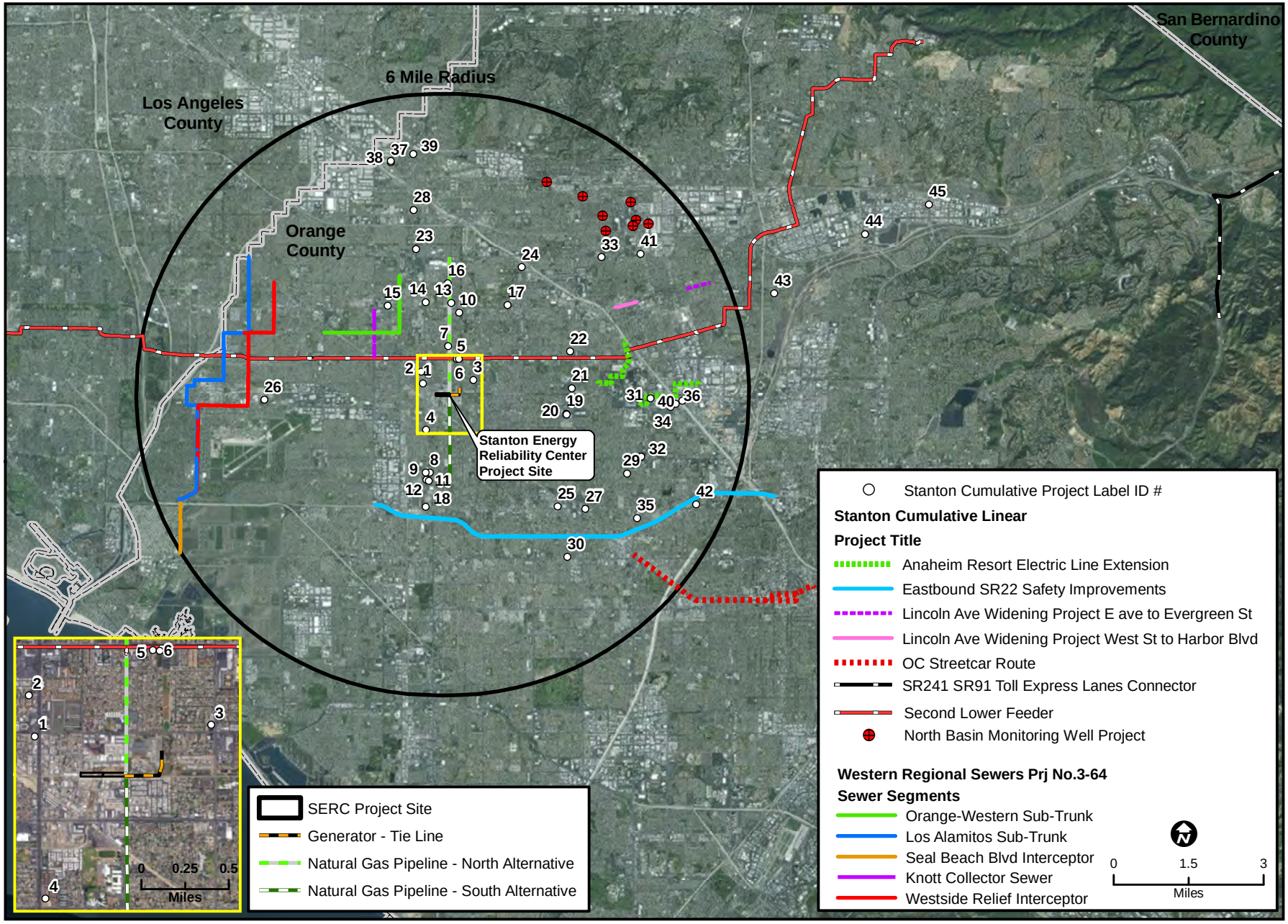
Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
		and widening connector to add one additional lane. Access to SR-22 eastbound from Bristol St. on ramp eliminated to accommodate I-5/SR-57 northbound connector. Install new and upgrade existing traffic control devices. Existing high occupancy vehicle lane with continuous access maintained. New changeable message sign installed east of SR-39.			
n/a	OC Streetcar	Streetcar line linking Santa Ana Regional Transportation Center with multi-modal hub at Harbor Blvd./Westminster Ave. in Garden Grove. A 4.15-mile route along Santa Ana Blvd., Fourth Street, and Pacific Electric right-of-way.	Route along Santa Ana Blvd., Fourth Street, and Pacific Electric right-of-way in the Cities of Santa Ana and Garden Grove.	n/a	Construction estimated 2018-2020.
n/a	Spectrum Paint & Powder, Inc.	Powder coat booth	1332 S. Allec St., Anaheim	n/a	SCAQMD Permit to Operate (PTO) granted
n/a	Dae Shin USA Inc. /Jae Weon Lee	5-20 million British thermal unit (mmbtu) boiler	610 N. Gilbert St., Fullerton	n/a	SCAQMD PTO granted
n/a	International Paper - Buena Park Plant	Flexographic air dry	6485 Descanso Ave., Buena Park	n/a	SCAQMD PTO granted
n/a	Ameripec Inc.	5-20 mmbtu boiler	6965 Aragon Circle., Buena Park	n/a	SCAQMD PTO granted
n/a	New Cingular Wireless PCS, AT&T Mobility	>500 horsepower (hp) emergency generator	301 N. Crescent Way, Anaheim	n/a	SCAQMD PTO granted
n/a	Damac Products, LLC.	Spray booth	14489 Industry Circle, La Mirada	n/a	SCAQMD PTO granted
n/a	Anaheim City, Convention Center	Charbroiler	800 W. Katella Ave., Anaheim	n/a	SCAQMD PTO granted
n/a	Southern California Edison Co.	Gas turbine, selective catalytic reduction (SCR), ammonia, etc.	8662 Cerritos Ave., Stanton	n/a	SCAQMD Authorization to Construct (ATC) applied

Label ID#	Project Title	Description	Location	Distance to SERC (Miles)	Status
n/a	UCI Medical Center	>500 hp emergency generator	101 The City Drive, Route 104, Orange	n/a	SCAQMD PTO granted
n/a	LA County Sanitation District NO. 2	Sewage treatment process	7400 E. Willow St., Long Beach	n/a	SCAQMD PTO granted
n/a	GKN Aerospace Transparency Sys Inc.	Drying oven, dip tank	12122 Western Ave., Garden Grove	n/a	SCAQMD PTO granted
n/a	US Foodservice	Charbroiler	15155 Northam St., La Miranda	n/a	SCAQMD PTO granted
n/a	Techno Coatings Inc.	Baghouse	1391 S. Allec St., Anaheim	n/a	SCAQMD PTO granted
n/a	CAL Aurum IND	Plating tank	15632 Container Lane, Huntington Beach	n/a	SCAQMD ATC applied
n/a	PRIMA-TEX Industries, Inc.	Screen printing press	6237 Descanso Circle, Buena Park	n/a	SCAQMD PTO granted
n/a	The Boeing Company	Cooling towers	5301 Bolsa Ave., Huntington Beach	n/a	SCAQMD PTO granted

Note: n/a not applicable or not available.

EXECUTIVE SUMMARY - FIGURE 1

Stanton Energy Reliability Center - Cumulative Projects



EXECUTIVE SUMMARY

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Esri, California Energy Commission

INTRODUCTION

John Heiser, AICP

PURPOSE OF THIS REPORT

On October 26, 2016, Stanton Energy Reliability Center, LLC (SERC, LLC or applicant, filed an application for certification (16-AFC-01) to the California Energy Commission to construct, own and operate the Stanton Energy Reliability Center (Stanton).

This Final Staff Assessment (FSA) is the California Energy Commission staff's independent analysis of the proposed Stanton Energy Reliability Center (Stanton or project) Application for Certification (AFC). Stanton is proposed to be a hybrid natural gas-fired, simple-cycle combustion turbine electrical generating facility located in the city of Stanton, in Orange County. The project would have a nominal generating capacity of 98 megawatts (MW) and be co-located with battery units for the storage of electricity that can deliver an additional 4.3 megawatt-hours each of grid services (total 8.6 megawatt hours). The battery system could be charged either by electricity from the grid or from the gas turbines.

Stanton would also feature technology that allows the facility to provide synchronous condensing capabilities for voltage support to the electrical grid when needed.

This FSA is a staff document that analyzes this project. It is not promulgated by the siting Committee (two Energy Commission Commissioners assigned to this project), nor is it a final decision.

The FSA 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, and local organizations which may lessen or eliminate potential impacts;
- staff's proposed conditions of certification (conditions) under which the project should be constructed and operated, if it is certified for construction and operation; and
- project alternatives.

The analyses contained in this FSA are based upon information from the: 1) applicant's AFC; 2) applicant's responses to staff's 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 Energy Commission staff; and 6) comments at public hearings and workshops.

The FSA presents staff's conclusions about potential environmental impacts and conformity with applicable LORS, as well as proposed conditions of certification to mitigate impacts that should apply to the design, construction, operation, and closure of the project. The analyses for most technical areas include discussions of proposed conditions of certification. The conditions contain staff's recommended measures to mitigate the project's environmental impacts, if any, and to ensure conformance with applicable 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., Title 20, California Code of Regulations, section 1701 et seq., and the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.)

ORGANIZATION OF THE FINAL STAFF ASSESSMENT

The FSA begins with an Executive Summary, this Introduction, followed by the Project Description. The next 21 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 FSA.

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 megawatts (MW) or larger (and related facilities[1]) 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 § 25523(d)).

The Energy Commission's siting regulations require staff to independently review the proposed project, assess whether all of the potential environmental impacts have been properly identified, and whether the applicant's proposed 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 to (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.

Energy Commission staff prepares an FSA that presents to the committee, the applicant, intervenors, agencies, California Native American tribes, organizations, other interested entities, and members of the public, staff's analyses, conclusions, and recommendations regarding the project. Where it is appropriate, the FSA incorporates comments received from agencies, the public, parties to the siting case, and comments made at public meetings.

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

[1] Related facilities include but not limited to: transmission lines, natural gas and water pipelines, battery storage, clutches for synchronous condenser operation.

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 in order 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 the PMPD, or a revised PMPD if there is one, the PMPD or revised 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 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 Stanton Energy Reliability Center AFC was sent to appropriate agencies after the AFC was deemed data adequate. These agencies included South Coast Air Quality Management District, the U.S. Fish and Wildlife Service (including the Carlsbad Office), California Department of Fish and Wildlife, California Air Resources Board, California Office of Historic Preservation, Orange County Environmental Health Division, the cities of Anaheim, Buena Park, Garden Grove, Stanton, Santa Ana, and Fountain Valley, Orange County Sheriff's Department and Fire Authority, California Highway Patrol, Federal Aviation Administration, Orange County Airport Land Use Commission, Joint Forces Training Base, Southern California Association of Governments, Orange County Public Works, Orange County Transit, the California State Board of Equalization, California State Office of Environmental Health Hazard Assessment, Magnolia Elementary School District, Anaheim Union High School District, the California Division of Occupational Safety and Health (Cal/OSHA), Union Pacific Railroad, U.S. Environmental Protection Agency, Native American Heritage Commission, and the California Independent System Operator (California ISO).

CONSULTATION WITH TRIBES

On March 9, 2017, Energy Commission staff sent letters to California Native American tribes identified on a Native American Heritage Commission (NAHC) list of tribes interested in consulting on development projects in the project area. Staff sent letters to other culturally-affiliated California Native American tribes not on the NAHC list on March 21, 2017. Emails were also sent to the tribes. The letters and emails invited the tribes to comment on the proposed project and offered to hold face-to-face consultation meetings if any were requested. An email was received from one tribe on March 23, 2017 indicating interest in the project and a request that the depth of disturbance of project construction be obtained. A letter was received from a different tribe indicating the project is out of their culturally-affiliated area. Follow-up phone calls were made with all tribes from whom staff did not receive a response, but as of publication of the FSA staff has not received any additional responses.

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 FSA.

LIBRARIES

On May 2, 2017, Energy Commission staff sent the Stanton Energy Reliability Center AFC to local libraries close to the proposed project site, and sent the Preliminary Staff Assessment (PSA) to the following libraries on March 29. 2018: Buena Park – Buena Park Library District; Garden Grove – Chapman Branch, Garden Grove Regional, and Tibor Rubin Library, Cypress Library; Anaheim – Euclid Branch Library, Haskett Public Library, and Sunkist Branch Library; Fullerton – Fullerton Public Library; Hawaiian Gardens – Hawaiian Gardens Library; LaPalma – La Palma Branch Library; Seal Beach – Los-Alamitos-Rossmoor Library; and the city of Stanton – Stanton Library. The AFC and PSA were 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 Adviser's Office coordinated closely on public outreach early in the review process. A Notice of Receipt of the AFC was docketed on November 4, 2016 and the Notice of Public Participation was docketed and mailed to the project mail list on April 5, 2017 after the AFC was deemed data adequate. A public participation notice for the project was docketed and published in English (Orange County Register), Korean (The Korea Times Orange County), and Vietnamese (Nguoi Viet Daily News) on April 24, 2017, and published in Spanish (Excélsior) on April 28, 2017.

The PAO contacted local elected officials, interested parties, agencies, and school districts. Native American tribal groups were separately contacted by Energy Commission Cultural Resources staff. Commission staff also published the April 17, 2017 Site Visit, Informational Hearing and Environmental Scoping Meeting notices in English, Spanish, Korean, and Vietnamese in the local newspapers. Spanish-, Korean-, and Vietnamese-language interpreters were made available to facilitate public comment at the hearing.

A Preliminary Staff Assessment (PSA) workshop was held in the city of Stanton on April 18, 2018. Notices of the workshop were translated into Spanish, Korean and Vietnamese. The PSA Executive Summary was also translated into Spanish, Korean and Vietnamese, made available at the workshop and docketed on the Stanton Energy Commission website. Spanish-, Korean-, and Vietnamese-language interpreters were made available to facilitate public comment at the workshop.

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 proposed project on November 4, 2016.

PROJECT SCHEDULE

Stanton has filed this AFC under the CEC's 12-month licensing process. Depending upon final approval, construction of the facility could be expected to begin in the 4th quarter of 2018. Following construction, pre-operational testing of the power plant would be expected to begin in the 3rd quarter of 2019 with full-scale commercial operation expected to begin in the 4th quarter of 2019.

MEETING CALIFORNIA'S ENERGY NEEDS

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 or investor-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 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 the 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

[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

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 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.

[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.

[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).

- 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.

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.

POTENTIAL FOR STANTON TO CONTRIBUTE TO LOCAL GRID CAPACITY REQUIREMENTS

Using Electric Gas Turbine (EGT) technology, Stanton would combine dispatchable, operationally flexible, and efficient energy generation with energy storage technology to provide new local capacity and reliability services specifically in the West LA Basin LRA (Local Reliability Area) of SCE's service territory. To achieve Stanton's primary objective, the applicant participated in SCE's 2013 Local Capacity Requirements Request for Offers (2013 LCR RFO) by submitting several project proposals. SCE, with the assistance of an independent evaluator and the CPUC's Procurement Review Group, considered over 100 proposals in this procurement and selected Stanton (SERC 2016). SCE and the applicant entered into a Resource Adequacy Purchase Agreement (RAPA) resulting from the 2013 LCR RFO, for two simple-cycle combustion turbines

with a total expected contract capacity of 98 MW, which was approved by the CPUC in November 2015 (CPUC 2015). SCE and the applicant entered into a second RAPA pursuant to SCE's 2014 Energy Storage Request for Offers, which was approved by the CPUC in September 2016. That contract is for 1.3 MW of lithium-ion battery storage capable of providing its contract capacity for a 4-hour period, or 5.2 megawatt-hours (MWh) (CPUC 2016).

Further discussion of contribution to the local grid capacity requirements can be found in the **Alternatives** section of this FSA.

PROJECT DESCRIPTION

John Heiser, AICP

INTRODUCTION

The Final Staff Assessment (FSA) for the Stanton Energy Reliability Center (Stanton or project) contains 23 technical analyses of potential environmental effects and engineering factors associated with the development and operation of the project. The Stanton Energy Reliability Center, LLC (applicant or project owner), is proposing to construct, own, and operate the electrical generating plant in Orange County, California, in the city of Stanton south of Standustrial Street along Dale Avenue and across from the Southern California Edison (SCE) Barre peaker power plant and Barre Substation. **Project Description Figure 1** presents the project's location at a regional scale.

The project site is adjacent to the Union Pacific Rail Road tracks to the south, industrial and commercial warehouses to the north that are located along Standustrial Street, adjacent to Dale Avenue on the east, and near Pacific Street to the west.

As proposed, Stanton would consist of two natural gas-fired, simple-cycle combustion turbine electrical generating (CTG) facilities rated at a nominal generating capacity of 49 megawatts (MW) each, co-located with two sets of lithium-ion batteries housed in purpose-built battery enclosures, each with a nominal capacity of 10 MW (total 20 MW) and 4.3 megawatt-hours (MWh) storage (total 8.6 MWh).

Stanton would also feature technology that allows the facility to provide synchronous condensing capabilities for voltage support to the electrical grid when needed.

The applicant is a joint venture of W Power, LLC, and Wellhead Energy, LLC. W Power, LLC, the majority partner, is a 100-percent female-owned business, and possesses Diverse Business Enterprise (DBE) certification from the State of California as a Women Business Enterprise under the California Public Utilities (CPUC) certification process.

PROJECT SETTING, LOCATION AND SITE DESCRIPTION

The project would be located within the city limits of Stanton at 10711 Dale Avenue. Access to the site would be from Dale Avenue either from Katella Avenue or from West Cerritos Avenue (**Project Description Figure 3**). The main access to the Stanton project site would be from Dale Avenue. There is secondary access, which would be from the west off of Pacific Street.

The Stanton site is located in an Industrial General zoned district of the city of Stanton. Land uses surrounding the site include the city's industrial area to the north and south, consisting of commercial/industrial warehouse-based businesses, a public storage facility, an elementary school to the north of the industrial/commercial area, public/quasi-public utility areas to the east, consisting of the Southern California Edison (SCE) Barre peaker power plant and Barre Substation, and high- and medium-density residential uses to the southeast and northwest.

The proposed project would require two new bridges crossing the Orange County Flood Control District storm water channel that bisects the project site: 1) a utility bridge that would support piping, electrical conduits, and cable tray, but no foot traffic or vehicles; and 2) a bridge that would be used for foot traffic and vehicles.

The combined 3.978-acre Stanton site comprises Parcel 1, which is 1.764 acres and is undeveloped, and Parcel 2, which is 2.214 acres, paved, and used for vehicle and equipment storage. The combined parcels are predominantly undeveloped – vacant land with a flood channel bisecting the two parcels and the location of wooden pallets, oil and tanker truck storage, wood garage, wood shed and vehicle and equipment storage. The two project parcels comprise three Assessor's Parcel Numbers, which are 126-531-43, 126-531-40, and 126-553-18. **Project Description Figure 4A** and **Figure 4B** show the proposed site plan of the project site depicting the arrangement of the buildings, battery energy storage system, turbine locations, bridge locations, access road, and support buildings.

Temporary construction facilities would include an approximate 0.7 acre worker parking area at the Bethel Romanian Pentecostal Church (2.89 acres total), 350 feet south of the Stanton site along Dale Avenue. The construction laydown area for the power plant would be on Parcel 2, the location of the battery storage system. **Project Description Figure 2** illustrates the architectural rendering of the power plant and battery array.

APPLICANT'S PROJECT PURPOSE AND OBJECTIVES

Stanton's primary goal is to be a state-of-the-art energy reliability resource. Stanton has been designed to deliver reliability services with a minimal carbon footprint and a low emissions profile that would combine dispatchable, operationally flexible, and efficient energy generation with energy storage technology to provide new local capacity and reliability services, specifically in the West Los Angeles (LA) Basin local reliability area of SCE's service territory.

Stanton's stated project objectives are as follows:

- Safely construct and operate an electrical energy reliability facility to meet SCE's need for local capacity in the West LA Basin local reliability area of its service territory.
- Use Wellhead's patented EGT technology to provide the following:
    - Greenhouse gas (GHG)-free operating reserve;
    - Flexible capacity without start time;
    - Peaking energy for local contingencies;
    - Voltage support and primary frequency response without fuel burn;
    - Superior transient response attributable to co-location of gas turbines and battery;
    - Gas turbine management of battery state-of-charge in real time;

- Site the project as near as possible to an SCE substation with available transmission capacity to serve the West LA Basin and minimize the generation tie-line length.
- Site the project in an existing industrial area on a previously disturbed site to minimize environmental impacts.
- Site the project in a community that embraces the project and its new technology.
- Safely construct and operate an electrical energy reliability project that would satisfy the commercial obligations of both Resource Adequacy Purchase Agreements (RAPAs) approved for Stanton by the CPUC.

Stanton is planning to operate with an expected annual capacity factor of 12.3 percent or less. How the project would be dispatched would vary as market conditions evolve. In order to respond to the changing market conditions, for the air quality impact analysis, the applicant evaluated a base case operational profile (Case 1) that assumes a maximum of 1,000 turbine starts and 1,276 turbine-hours of full load operation per year (e.g., 500 starts and 638 full load hours per turbine). In addition, the applicant evaluated a second operational profile (Case 2) that is based on only 200 turbine-starts and 1,700 turbine-hours of full-load operation per year. (e.g., 100 turbine starts and 850 full load hours per turbine).

PROJECT COMPONENTS

Stanton would consist of two simple-cycle generating facilities consisting of two General Electric (GE) LM6000 hybrid enhanced gas turbine (Hybrid EGT™) systems. The Hybrid EGT™ combines a combustion gas turbine with an integrated battery storage component operated by a proprietary software system developed by GE based upon Wellhead's patent. The integrated system will be capable of providing synchronous condensing, GHG-free spinning reserve, high speed regulation, primary frequency response, and voltage support with the combined response of the gas turbine and battery storage system.

Project Description Figure 4A and **Figure 4B** present the general arrangements.

Stanton would interconnect to the grid at the SCE Barre Substation through a 0.35 mile – long underground generator tie-line (or underground transmission line). **Project Description Figure 1 and Figure 3** illustrate the transmission line route including the linear route for the proposed alternatives for the SoCalGas natural gas pipeline (Route A). Process and potable water would be supplied by Golden State Water Company via connections in Dale Avenue and Pacific Street.

Based on the selection by SCE, Stanton is proposing the following:

- Two GE LM6000 PC combustion turbine generators (CTGs) equipped with selective catalytic reduction (SCR), air emissions control equipment, and associated support equipment for nitrogen oxides (NOx) and carbon monoxide (CO) control;
- Each CTG would generate approximately 49 MWs at full load under average ambient conditions;
- Each CTG would be designed to burn only natural gas during operations;

- Hybrid EGT operation utilizing battery storage would provide near greenhouse gas (GHG)-free operating reserve, regulation up and regulation down, frequency regulation, and voltage regulation; Each CTG is designed to start and ramp up to achieve full capacity within 10 minutes. This fast-start capability is designed to meet the needs of the grid which is rapidly becoming increasingly dependent on intermittent renewable resources. Each hybrid EGT also provides various ancillary services, such as spinning reserve, allowing Stanton to readily adapt to changing conditions in the energy and ancillary services markets.
- Two sets of lithium-ion batteries housed in purpose-built battery enclosures, each with a nominal capacity of 10 MW (total 20 MW) and 4.3 megawatt-hours (MWh) storage (total 8.6 MWh). The battery system could be charged either by the grid or the onsite combustion turbines. The batteries enable the gas turbines to supply spinning reserve by providing approximately 10 minutes of ramping profile for the gas turbines. In total, Stanton is proposing to provide 98 MWs (net) of capacity to the grid;
- The battery storage system would be constructed after the combustion turbine part of the Hybrid EGTs is complete;
- Each LM6000 PC would require a 50-foot tall exhaust stack with an exhaust diffuser at the top of the stack for a combined height of 70-feet. Each exhaust stack would be housed in a 70-foot tall enclosure that would contain acoustic barriers;
- Noise from Hybrid EGT operations would be decreased by an open roofless enclosure around each LM6000 PC CTG package. Each enclosure would be 35 feet in height with a minimum of 24-gauge metal cladding with interior acoustic absorption treatment;
- The simple-cycle CTGs do not use steam for combined-cycle power generation, therefore do not use water in evaporative (wet) cooling towers;
- Interconnection to SCE's Barre Substation via a 0.35-mile-long underground generator tie-line that would run from the Stanton site east under Dale Avenue to the substation;
- Equipment (generators, lube oil, gas compressors, and HVAC) would be air cooled;
- Natural gas connection via either a new 12- or 16-inch-diameter pipeline that would extend 2.75 miles north along Dale Avenue to Southern California Gas Company's (SoCal Gas's) Line 1014 in La Palma Avenue;
- Process and potable water supply from Golden State Water Company via connections in Dale Avenue and Pacific Street;
- Water supplied by Golden State Water Company will be used for fire protection and service water, potable outlets, and safety showers;
- Golden State Water Company has provided the applicant with a will-serve letter demonstrating they have adequate supply available and are able to serve the project both during the construction and operation phases.
- Average daily water use estimates, depending on daily temperatures and Hybrid EGT operations, would range between 151.9 gallons per minute to 186 gallons per minute, with water use per year between 13.4 to 34 acre-feet;

- Stanton will use demineralized potable water for inlet air cooling, controlling Nitrogen oxides and power augmentation for the gas turbines.
- The product water from the demineralizer system will be stored in a 100,000 gallon storage tank,
- Estimated wastewater discharge to the sewer would range between 42.2 gallons per minute up to 51.6 gallons per minute. The annual wastewater discharge to the city of Stanton sanitary sewer line would range between 1.2 to 34 gallons per minute. The sanitary sewer line is located in Pacific Street to the west of Parcel 2; and
- Temporary construction facilities would include a 2.89-acre worker parking area at the Bethel Romanian Pentecostal Church, 350 feet south of the Stanton site along Dale Avenue. The construction laydown area for the gas-fired power plant would be on Parcel 2, the location of the battery storage system.

Natural gas pipeline construction staging areas include staging yard A, a one-half acre parcel adjacent to the Stanton site, which is owned by SCE. Staging area B is a one half-acre area within a parking lot 700 feet south of the intersection of Crescent and Dale avenues (open area on Dale Avenue surrounded by a parking lot). Access to the natural gas pipeline route would be along existing urban streets. The natural gas pipeline trench would be 6 feet deep; approximately 4-6 feet wide, with a minimum cover depth of 36 inches.

The two 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 for carbon monoxide (CO) and volatile organic compound (VOC) control. Stanton would have a net generation capacity of 98 MW. 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 system consists of a stationary CTG, supporting systems, and associated auxiliary equipment. The CTGs will be equipped with the following required accessories to provide safe and reliable operation:

- Air inlet system complete with a modular filtration system
- Inlet air fogging system
- Weatherproof acoustic enclosures with explosion-proof lighting
- Fuel system, including an electronically controlled fuel metering valve
- Two lube oil systems: one synthetic for the gas turbine and one mineral for the generator
- Stainless steel lube oil reservoirs, valve trim, and piping
- Lube oil cooling provided by an air-cooled fin-fan cooler
- Electro-hydraulic start system
- 24-volt direct current (DC) 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 Stanton 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.

Power would be generated by two EGTs at 13.8 kV and then stepped up using a single 13.8/66-kV, oil-filled generator step-up transformer to support connection to the local 66-kV network at the Barre Substation. Surge arrestors protect the transformer from surges in the 66-kV system caused by lightning strikes or other system disturbances.

The transformer will be set on a concrete foundation that includes a secondary oil containment reservoir to contain the transformer oil in the event of a leak or spill. The high-voltage side of the generator step-up transformer will be connected to a single circuit, three-phase, 66-kV line, which will be connected to the SCE 66-kV switchyard at the Barre Substation east of the Stanton site via an approximately 0.35-mile underground generator tie-line.

The 15-kV switchgear interface point allows the switchgear to be back-fed from the local grid when the CTGs are not running, or directly from the CTGs when they are in operation. Each CTG will have a 15-kV rated breaker between the generator and the generator step-up transformer for generator synchronization and isolation.

A detailed discussion of the electric transmission system is provided in the **Transmission System Engineering** section of this staff assessment.

The two EGTs will use a common 125-volt DC power supply system for control power and control computers on uninterruptible power sources, consisting of two 50 percent capacity battery banks, two 100-percent static battery chargers, a 125 VDC panelboard, an inverter, and a distribution panel for essential balance of plant (BOP) and 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 battery banks while supplying power to the DC loads.

Under abnormal or emergency conditions, when power from the alternating current (AC) power supply (480-volt) system is unavailable, the batteries supply DC power to the DC system loads. Recharging of a discharged battery occurs whenever 480-volt power becomes available from the AC power supply system.

The 125-volt DC system will also be used to provide control power to the 13.8-kV switchgear, the 4,160-volt switchgear, the 480-volt load centers, critical control circuits, the plant control system, and the emergency DC motors. Notably, this power plant battery power supply system would be separate and apart from the hybrid EGTs energy storage system battery arrays comprising lithium-ion batteries.

Fuel System

The CTGs would be designed to burn only natural gas. Applicant-provided data suggests the natural gas requirement during operation at annual average ambient temperature would be approximately 938.4 million British thermal units per hour (MMBtu/hr) with higher heat value (HHV) basis totals for the two CTG units. Natural gas would be delivered to Stanton with a 2.75-mile-long pipeline extending north along Dale Avenue to La Palma Avenue. At the project site, the natural gas will flow through either a 12-inch- or 16-inch pipeline, turbine-meter set, gas scrubber/filtering equipment, a gas pressure control station, electric-driven booster compressors, and coalescing and final fuel filters prior to entering the combustion turbines.

A minimum floating delivery pressure of 300 pounds per square inch gauge, as measured downstream of a nonregulated meter set, is expected from Southern California Gas Company (SoCalGas). One 100-percent-capacity, electric-driven fuel gas compressor will be provided to boost the pressure to that required by the CTGs. The gas compressor will be located outdoors and will be housed in an acoustical enclosure to reduce the compressor noise level.

Inlet Air Fogging System

Combustion air for each CTG will be cooled via the use of a fogging-based system. Fogging systems are based upon the extremely high pressurization of demineralized water being forced through nozzles to create a fine mist or fog. The fogging system will cool the inlet air to the wet bulb temperature of the inlet air. The fogging system will be in service only when the CTGs are at or near full load, and will not be placed in service for ambient dry bulb conditions below 50°F.

Waste Management

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

Nonhazardous Solid Wastes

Stanton 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 Stanton. 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.

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 the South Coast Air Quality Management 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 Stanton would use demineralized water injection and selective catalytic reduction (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 percent aqueous ammonia. Ammonia slip, or the concentration of unreacted ammonia in the stack exhaust, would be limited to 5 parts per million by volume (ppmv). The project would use an ammonia delivery system which consists of a 5,000-gallon ammonia tank, spill containment basin, and refilling station with a spill containment basin and sump.

Carbon Monoxide (CO) and volatile organic compound (VOC) emissions would be controlled by means of CO oxidation catalyst. The oxidation catalyst would limit 1-hour stack CO emissions to 4 ppmvd. VOC emissions would be limited to 2 ppmvd.

Particulate emissions would be controlled by the best combustion practices along with 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 system (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 supervisory control system (SCS) when the emissions approach or exceed pre-selected allowable emissions limits.

Fire Protection

The Stanton 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, hydrants, carbon dioxide (CO2) fire suppression systems for the CTGs, and portable fire extinguishers. A fire loop using underground piping to connect two separate Golden State Water Company supply mains would be designed to protect Stanton, 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 system will 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 National Fire Protection Association Standards (NFPA), would be provided to reach all parts of the facility. Both the fire hydrants and any 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. 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, and ammonia storage and unloading equipment.

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 CO_2 fire-suppression system provided for each CTG will include a CO_2 storage tank, CO_2 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 CO_2 upon detection of a fire. The CO_2 fire suppression system would cover the turbine enclosure and accessory equipment enclosure of each CTG.

Portable CO_2 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. 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 Stanton electrical system is susceptible to ground faults, lightning, and switching surges that can constitute a hazard to site personnel and electrical equipment. The Stanton 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 supervisory control system (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 Schedule and Construction

Based on the applicant's proposed schedule and assuming the project is approved by the Energy Commission, construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place from November 2018 to December 2019 (approximately 14 months total). Major milestones are listed in **Project Description Table 1**.

Project Description Table 1
Major Project Milestones

Activity	Date
Begin Construction	November 2018
Startup and Test	September 2019
Commercial Operation	December 2019

The applicant expects project construction to last 12 months, from November 2018 until October 2019, with commercial operation expected to start at the end of December 2019. The project's construction workforce would average 48 workers over the 12-month period and reach a peak of 78 workers in month 8 (June 2019)

Typically, construction would be scheduled to occur between 7 a.m. and 8 p.m. on weekdays and 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, and working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the project, some project activities would occur 24 hours per day, 7 days per week. However, in accordance with the city of Stanton noise ordinance, noisy construction work would not take place on Sundays or federal holidays, or between 8 p.m. and 7 a.m. Monday through Saturday.

Facility Operation

Stanton will have an operations and maintenance manager, plant technicians, and an instrument technician working periodically at the project site during the standard 5-day, 8 hour-per-day, workweek for the performance of preventive and corrective work orders. Otherwise, the facility will be unmanned. Project operation will take place remotely from SERC, LLC's control room in Sacramento, California. Plant technicians will be dispatched to Stanton by remote operators for trouble and service calls when needed.

Stanton is expected to have an annual plant availability of 92 to 98 percent, including scheduled outages for maintenance and forced outages. SERC, LLC expects to operate Stanton in a similar fashion to a peaker unit, with some amount of load following and cycling. The facility is expected to be operated during high-demand times (typically evening hours) to supplement base-load and renewable generation capacity. The exact operational profile of the plant, however, cannot be defined in detail because operation of the facility depends on the variable demand in the Stanton service area.

Facility Closure

Stanton 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, Stanton would maintain security of the Stanton 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.

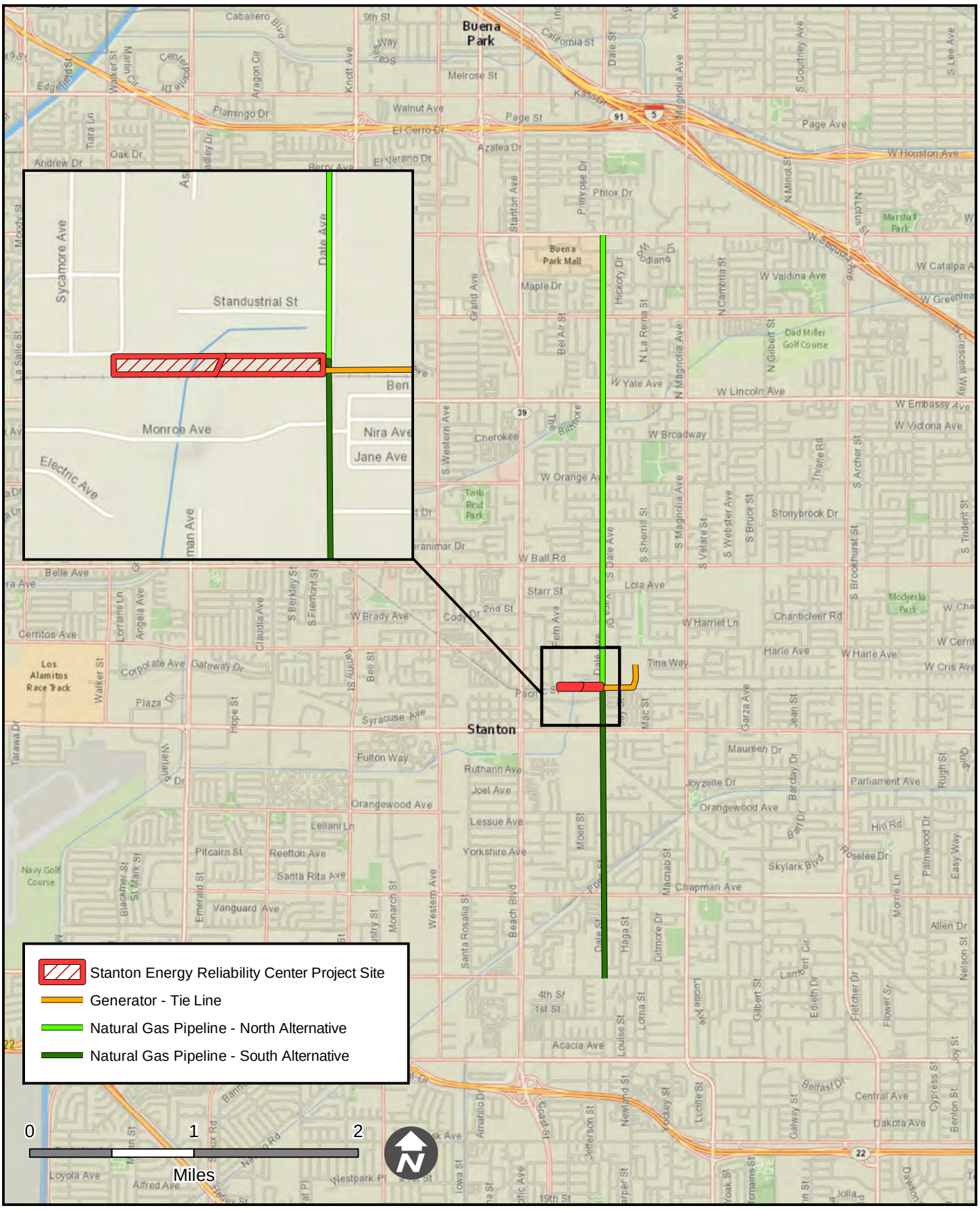
If the facility is permanently closed, the closure procedure would follow a plan that would be developed as described in the **Compliance Conditions and Compliance Monitoring Plan** section of this staff assessment.

REFERENCES

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

PROJECT DESCRIPTION - FIGURE 1

Stanton Energy Reliability Center - Project Location



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M, California Energy Commission, National Geographic World Map

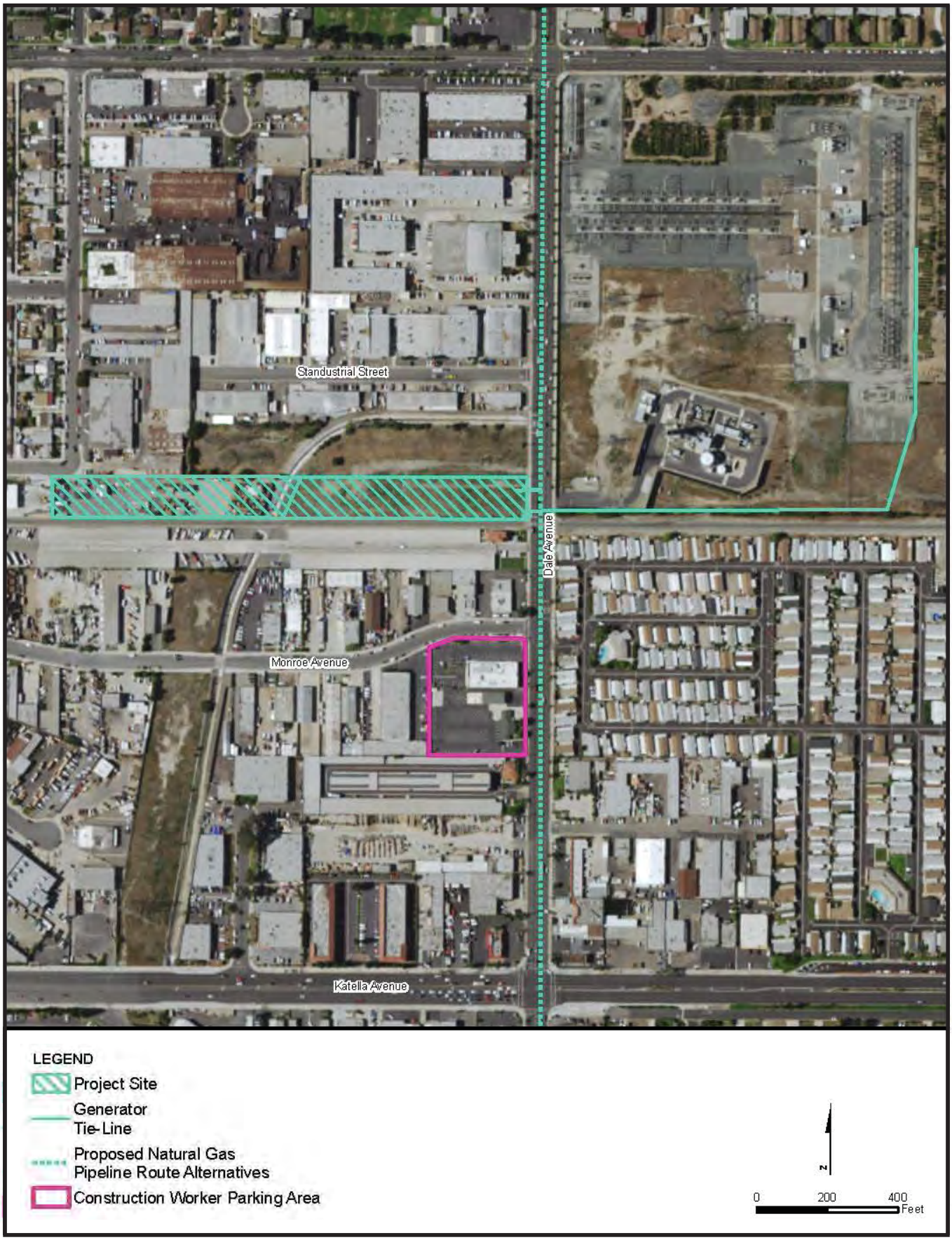
PROJECT DESCRIPTION - FIGURE 2

Stanton Energy Reliability Center - Architectural Rendering

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 1.0-2

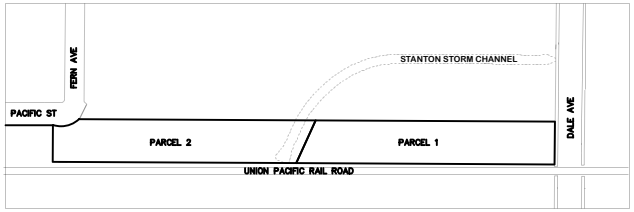
PROJECT DESCRIPTION - FIGURE 3
Stanton Energy Reliability Center - Construction Worker Parking Area



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION
SOURCE: AFC Figure 2.1-5

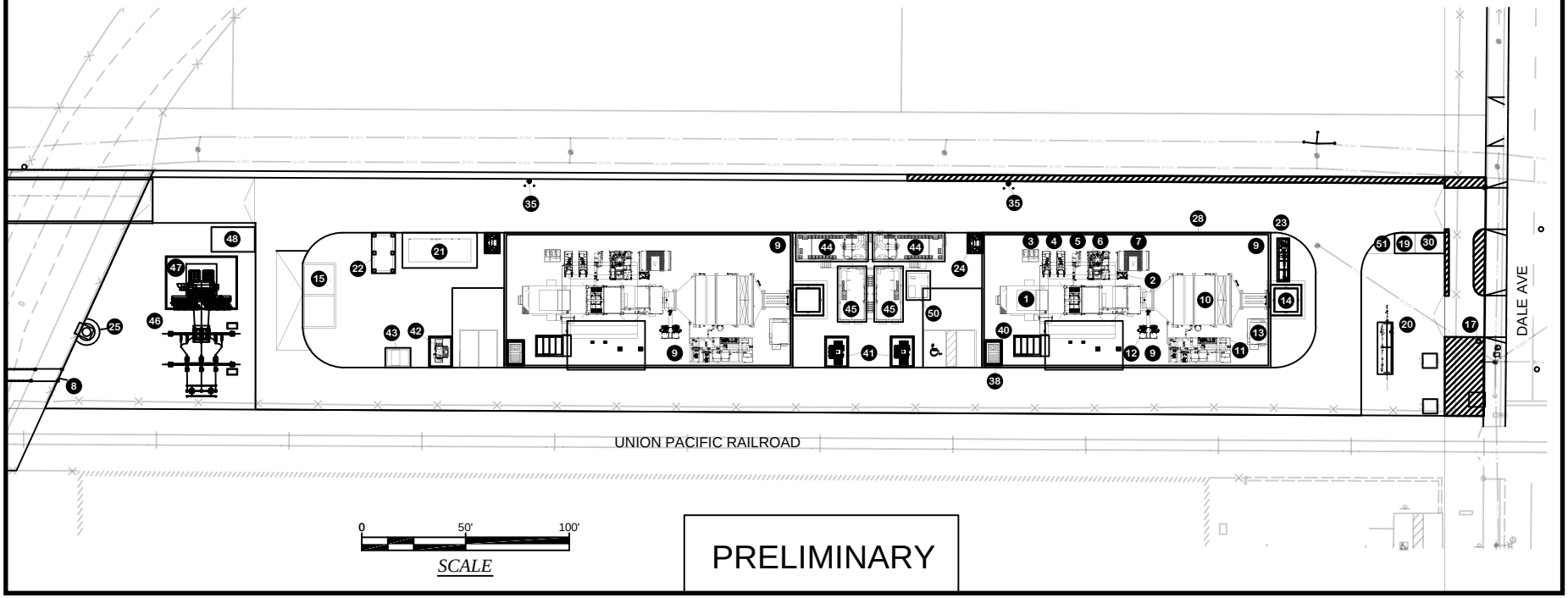
PROJECT DESCRIPTION - FIGURE 4A

Stanton Energy Reliability Center - General Arangement for Parcel 1



KEYNOTES:

1. GAS TURBINE/GENERATOR
2. SPRINT SKID
3. FOGGER SKID
4. WATER INJECTION PUMPS
5. CLUTCH LUBE OIL SKID
6. HYDRAULIC START SKID
7. FIN-FAN L.O. COOLER
8. UTILITY BRIDGE
9. PORTABLE HAZMAT STORAGE CART
10. SCR/CO UNIT
11. AMMONIA INJECTION SKID
12. PURGE AIR FANS
13. CEMS ENCLOSURE
14. EXHAUST STACK
15. AMMONIA STORAGE TANK & PUMPS
16. WAREHOUSE
17. STEEL POLE MOUNTED DISCONNECT
18. PORTABLE HAZARDOUS MATERIALS & STORAGE
19. TRASH ENCLOSURE
20. GAS MSA YARD (SCG)
21. FUEL GAS COMPRESSOR (FGC)
22. FGC L.O. FIN-FAN COOLER
23. GAS EMERGENCY SHUT-DOWN VALVE
24. FUEL GAS FILTER SKID
25. PARCEL 1 STORMWATER LIFT STATION
26. INVERTER (PCS)
27. ISOLATION TRANSFORMER
28. GT FACILITY ENCLOSURE
29. BATTERY ENERGY STORAGE SYSTEM
30. BACKFLOW PREVENTER
31. WATER FORWARDING SKID
32. DEMINERALIZED WATER SKID
33. REVERSE OSMOSIS SKID
34. DEMINERALIZED WATER TANK
35. FIRE HYDRANT
36. STORMWATER DETENTION TANK
37. FOGGING WATER DRAIN TANK
38. OILY WATER WASTE TANK
39. PARCEL 2 STORMWATER COLLECTION
40. SWITCHGEAR (15KV)
41. AUX TRANSFORMER (480V)
42. AUX TRANSFORMER (4160V)
43. SWITCHGEAR (4160V)
44. POWER DISTRIBUTION MODULE
45. CONTROL MODULE
46. SWITCHYARD
47. GSU TRANSFORMER
48. SWITCHYARD CONTROL
49. BESS SWITCH GEAR
50. AIR COMPRESSOR SKID
51. FIRE ALARM ANNUNCIATOR PANE



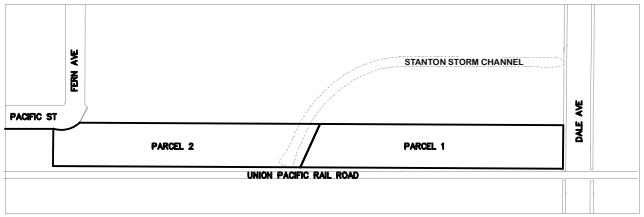
PROJECT DESCRIPTION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.1-1a

PROJECT DESCRIPTION - FIGURE 4B

Stanton Energy Reliability Center - General Arangement for Parcel 2



KEYNOTES:

1. GAS TURBINE/GENERATOR
2. SPRINT SKID
3. FOGGER SKID
4. WATER INJECTION PUMPS
5. CLUTCH LUBE OIL SKID
6. HYDRAULIC START SKID
7. FIN-FAN L.O. COOLER
8. UTILITY BRIDGE
9. PORTABLE HAZMAT STORAGE CART
10. SCR/CO UNIT
11. AMMONIA INJECTION SKID
12. PURGE AIR FANS
13. CEMS ENCLOSURE
14. EXHAUST STACK
15. AMMONIA STORAGE TANK & PUMPS
16. WAREHOUSE
17. STEEL POLE MOUNTED DISCONNECT
18. PORTABLE HAZARDOUS MATERIALS & STORAGE
19. TRASH ENCLOSURE
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21. FUEL GAS COMPRESSOR (FGC)
22. FGC L.O. FIN-FAN COOLER
23. GAS EMERGENCY SHUT-DOWN VALVE
24. FUEL GAS FILTER SKID
25. PARCEL 1 STORMWATER LIFT STATION
26. INVERTER (PCS)
27. ISOLATION TRANSFORMER
28. GT FACILITY ENCLOSURE
29. BATTERY ENERGY STORAGE SYSTEM
30. BACKFLOW PREVENTER
31. WATER FORWARDING SKID
32. DEMINERALIZED WATER SKID
33. REVERSE OSMOSIS SKID
34. DEMINERALIZED WATER TANK
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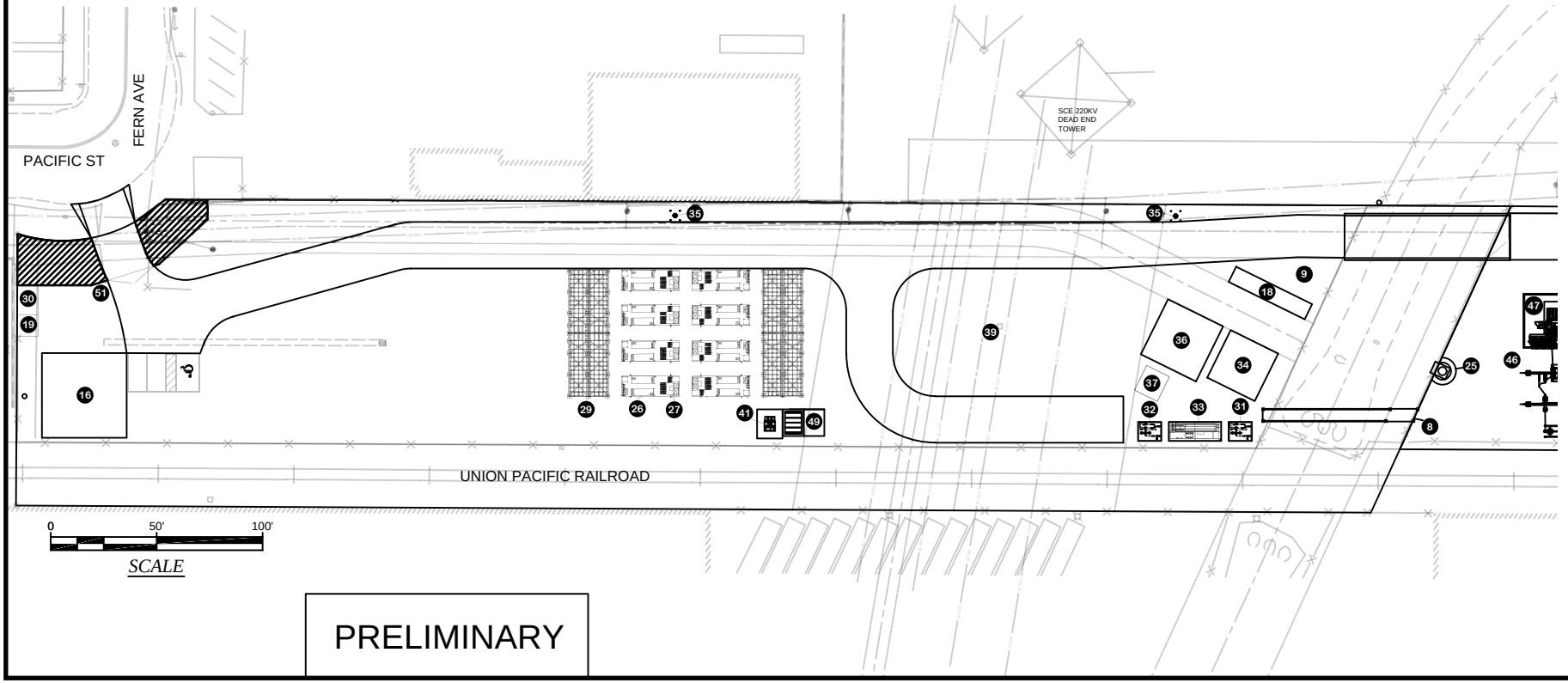
46. SWITCHYARD
47. GSU TRANSFORMER
48. SWITCHYARD CONTROL
49. BESS SWITCH GEAR
50. AIR COMPRESSOR SKID
51. FIRE ALARM ANNUNCIATOR PANEL



PRELIMINARY

PROJECT DESCRIPTION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.1-1b

Environmental Assessment

AIR QUALITY

Testimony of Tao Jiang, Ph.D, PE

SUMMARY OF CONCLUSIONS

Staff concludes that with the adoption of the attached conditions of certification, the proposed Stanton Energy Reliability Center (Stanton) would not result in significant air quality related impacts during project construction or operation, and that Stanton would comply with all applicable federal, state, and South Coast Air Quality Management District (SCAQMD or District) air quality laws, ordinances, regulations and standards (LORS) and California Environmental Quality Act (CEQA) requirements.

The project would be constructed in an industrial area in the city of Stanton, Orange County, CA. Stanton would consist of two Hybrid EGT™ systems. The Hybrid EGT combines a General Electric (GE) LM6000 combustion gas turbine with an integrated 10-megawatt (MW) GE battery storage component operated by a proprietary software system developed by GE based upon Wellhead's patent. The integrated system will be capable of providing GHG free spinning reserve, high speed regulation, primary frequency response, and voltage support with the combined response of the gas turbine and battery storage system. In total, Stanton will provide 98 MW (nominal) of EGT capacity.

The SCAQMD published a Preliminary Determination of Compliance (PDOC) on February 9, 2018. A Final Determination of Compliance (FDOC) was published on May 2, 2018 and incorporated appropriate changes based on comments received on the PDOC. Compliance with all SCAQMD rules and regulations was evaluated in the FDOC. Per the FDOC, the SCAQMD determined Stanton would comply with applicable LORS.

Staff has assessed the potential for localized impacts and regional impacts for the project's proposed construction, commissioning, and operation. Staff is recommending mitigation and monitoring requirements sufficient to reduce potential adverse construction, commissioning, and operating emission impacts to less than significant.

Staff has considered the potential for adverse air quality impacts to the minority populations surrounding the site. The adoption of the recommended conditions of certification is expected to reduce the project's direct and cumulative air quality impacts to less than significant for all populations, including minority and low-income populations.

Global climate change and greenhouse gas (GHG) emissions from the proposed project are discussed and analyzed in **Air Quality Appendix Air-1**. The project owner expects to operate the proposed gas turbines well below an annualized plant capacity factor of 60 percent. Therefore, the proposed plant would not be considered a base load facility and the turbines would not be subject to California's Greenhouse Gas Emission Performance Standard.

The California Air Resources Board (ARB) adopted regulations implementing cap-and-trade regulations on December 22, 2011. The cap-and-trade program became active in January 2012, with enforcement beginning in January 2013. ARB staff continues to develop and implement regulations to refine key elements of the GHG reduction measures and to improve their linkage with other GHG reduction programs. The project would emit over 25,000 metric tonnes of carbon dioxide equivalent ($MTCO_2e$) emissions. Therefore, the project is expected to be subject to federal and state mandatory GHG reporting and state cap-and-trade requirements.

INTRODUCTION

On October 26, 2016, Stanton Energy Reliability Center, LLC (SERC, LLC) submitted an Application for Certification (AFC) to the Energy Commission to construct and operate a hybrid electrical generating and storage facility. This analysis evaluates the expected air quality impacts of criteria air pollutant emissions from the construction and operation associated with the proposed Stanton. Criteria air pollutants are defined as air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health.

The criteria pollutants analyzed are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), inhalable particulate matter (PM10), and fine particulate matter (PM2.5). In addition, nitrogen oxides (NOx), consisting primarily of nitric oxide (NO) and NO_2, sulfur oxides (SOx) and volatile organic compounds (VOC) are also analyzed. NOx and VOC react in the atmosphere as precursors to ozone. NOx and SOx emissions react in the atmosphere to form particulate matter, and are contributors to acid rain. Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in the context of cumulative impacts (**Air Quality Appendix Air-1**).

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

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

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local LORS and policies pertain to the control of criteria pollutant emissions and the mitigation of air quality impacts. Staff's analysis describes or evaluates the proposed facility's compliance with these requirements, shown in **Air Quality Table 1**. Additional analysis of Stanton's compliance with these LORS, including discussion of how the facility meets the LORs requirements outlined in **Air Quality Table 1,** is included in the Compliance with LORS section.

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

Applicable LORS	Description	Stanton Consistency
Federal	**United States Environmental Protection Agency**	
Title 40 Code of Federal Regulations (CFR) Part 50 (National Primary and Secondary Ambient Air Quality Standards)	National Ambient Air Quality Standards (NAAQS) are set in this part. NAAQS define levels of air quality that are necessary to protect public health.	**Consistent:** Stanton would not cause a violation of any of the criteria attainment pollutants during normal operations (including startup and shutdown periods). Nonattainment pollutant emissions would be mitigated consistent with SCAQMD's SIP approved NSR program.
Title 40 CFR Part 51 (Requirements for Preparation Adoption and Submittal of Implementation Plans)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to sources of designated nonattainment pollutants. This requirement is addressed through SCAQMD Regulation XIII.	**Consistent:** A Permit to Construct and Permit to Operate would be obtained by the project owner satisfying the requirements.
Title 40 CFR Part 52 (Approval and Promulgation of Implementation Plans)	Prevention of Significant Deterioration (PSD)–Establishes requirements for attainment emissions. PSD requirements apply on a pollutant specific basis for major stationary sources. The PSD threshold limit for attainment pollutants applicable to Stanton is 250 tons per year as Stanton is a simple cycle power plant. SCAQMD has partial delegation of PSD authority from the United States Environmental Protection Agency (U.S. EPA) depending on the calculation methodology and plant wide applicability limits.	**Consistent:** Stanton is not subject to PSD review for NOx, PM10, SOx, and CO because the potentials to emit for these attainment pollutants do not exceed the applicability thresholds of 250 tpy. Therefore, Stanton is not subject to PSD requirements for GHG either, regardless of the GHG potential emissions.
Title 40 CFR Part 60, Subpart A (General Provisions)	Outlines general requirements for facilities subject to standards of performance including notification, work practice, monitoring and testing requirements.	**Consistent:** Compliance is expected based on FDOC.
Title 40 CFR Part 60, Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)	Establishes NSPS for new combustion turbines. For new combustion turbines with a rated heat input greater than 50 MMBtu/hr and less than or equal to 850 MMBtu/hr NOx emissions are limited to 25 parts per million (ppm) at 15 percent oxygen (O_2) and fuel sulfur limit of 0.060 pounds (lbs) of SOx per MMBtu heat input.	**Consistent:** Stanton turbines would meet the Subpart KKKK requirements with the use of dry-low NOx and SCR systems limiting NOx emissions to 2.5 ppm. Stanton would be limited to pipeline quality natural gas as fuel to meet SO_2 emission requirements.

Applicable LORS	Description	Stanton Consistency
Title 40 CFR Part 60, Subpart TTTT (Standards of Performance for Greenhouse Gas Emissions for electrical Generating Units)	Establishes standards of performance for carbon dioxide (CO_2). Non-base load electric generating units are subject to a heat input limit of 120 lbs CO2/MMBtu.	**Consistent:** Compliance with this standard can be demonstrated by the exclusive use of natural gas as fuel.
Title 40 CFR Part 63 (National Emission Standards for Hazardous Air Pollutants)	Establishes National Emission Standards for Hazardous Air Pollutants (NESHAPS).	**Consistent:** The FDOC demonstrates that the facility total HAP emissions would be below the 25 tons per year total or 10 ton per HAP major source threshold. The facility would not be subject to the requirements of this subpart. In addition the facility is not proposing to permit any diesel fired emergency equipment and therefore would not be subject to Subpart ZZZZ requirements.
Title 40 CFR Part 64 (Compliance Assurance Monitoring)	The Compliance Assurance Monitoring (CAM) rule establishes monitoring requirements for emission control systems. The CAM rule applies to emission units with uncontrolled potential to emit levels greater than applicable major source thresholds.	**Consistent:** Stanton will not be a major source. Therefore, CAM is not applicable.
Title 40 CFR Part 72 (Acid Rain Program)	Electrical generating units greater than 25 MW are subject to the provisions involving NOx and SO_2 reductions. Requires a Title IV permit and compliance with acid rain provisions, implemented through the Title V program. This program is within the jurisdiction of the SCAQMD with U.S. EPA oversight.	**Consistent:** Stanton will measure and record SO_2 emissions by using the applicable procedures specified in appendix D to Part 75 for estimating hourly SO_2 mass emissions, pursuant to §75.11(d)(2). Stanton will use the NOx CEMS which complies with the applicable requirements of §75.10 for general operating requirements.
State	**California Air Resources Board and Energy Commission**	
H&SC §40910-40930 (District Plans to Attain State Ambient Air Quality Standards)	State Ambient Air Quality Standards should be achieved and maintained. The permitting of the source needs to be consistent with the approved clean air plan.	**Consistent:** The SCAQMD New Source Review (NSR) program needs to be consistent with regional air quality management plans.
H&SC §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 FSA ensure compliance with this nuisance regulation.
H&SC §44300-44384 (Air Toxic “Hot Spots” Information and Assessment)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; health risk assessments.	**Consistent:** The SCAQMD requires participation in a district level inventory and reporting program.
Title 13 California Code of Regulations (CCR), §2449 (General	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	**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)

Applicable LORS	Description	Stanton Consistency
Requirements for In-Use Off-Road Diesel Fueled Fleets)	reported to the ARB and labeled, and restricts adding older vehicles into fleets.	Regulation for In-Use Off-Road Diesel Fleets.
Title 17 CCR, Subchapter 10 (Climate Change)	Established requirements for mandatory greenhouse gas reporting, verification and other requirements pursuant to cap and trade regulations.	**Consistent:** Stanton would be subject to mandatory reporting of GHG emissions per California Air Resources Board (ARB) greenhouse gas regulations.
Local	**South Coast Air Quality Management District**	
Regulation II – Permits	This regulation sets forth the regulatory framework of the application for issuance of construction and operation permits for new, altered and existing equipment. **Rule 202 –** Temporary Permit to Operate. A person shall notify the Executive Officer before operating or using equipment granted a permit to construct. Upon such notification, the permit to construct shall serve as a temporary permit for operation of the equipment until the permit to operate is granted or denied. **Rule 205** – Expiration of Permit to Construct. Establishes that a SCAQMD permit to construct expires one year from the date of issuance unless a time extension has been approved in writing by the SCAQMD Executive Officer. **Rule 212 –** Standards for Approving Permits and Issuing Public Notice. Outlines specific criteria for approving permits and issuing public notice. **Rule 218 –** Continuous Emission Monitoring. Requires specified facilities to install and maintain stack monitoring systems.	**Consistent:** Rules 202 and 205 requirements are set forth in condition 1.b in FDOC Section E: Administrative Conditions of the facility permit and condition E193.2. Condition of Certification AQ-E2 (E193.2) includes these requirements. Stanton is not subject to Rule 212(c)(1) and Rule 212(c)(3) public notice requirements. The public notice is required under Rule 212(c)(2). The District will prepare the public notice which will contain sufficient information to fully describe the project. Stanton would be required to install and maintain stack monitoring systems by permit condition.
Regulation IV – Prohibitions	This regulation sets forth the restrictions for visible emissions, odor, nuisance, fugitive dust, various air emissions, and fuel contaminants. This regulation also specifies additional performance standards for specific emission units. **Rule 401 –** Visible Emissions. Establishes limits on visible emissions from stationary sources. **Rule 402 –** Nuisance. Prohibits the discharge of air contaminants or other material which could cause injury, detriment, nuisance or annoyance to the public or could damage business or property. **Rule 403 –** Fugitive Dust. Establishes requirements for controlling man-made fugitive dust. The provisions apply to any activity of man-made condition capable of	**Consistent:** Stanton gas turbines would be fired exclusively with pipeline quality natural gas and subject to BACT requirements. Visible emissions are not expected and compliance with Rule 401 is expected. Nuisance problems are not expected under normal operating conditions of the gas turbines and other equipment. Compliance with Rule 402 is anticipated. Fugitive dust is not expected from the gas turbines during project operations. During the project construction, Conditions of Certification **AQ-SC2**, **AQ-SC3** and **AQ-SC4** ensure compliance with Rule 403. Compliance with the CO limit of Rule 407 is expected based on BACT CO

Applicable LORS	Description	Stanton Consistency
	generating fugitive dust. **Rule 407 –** Liquid and Gaseous Contaminants. Limits emissions of CO and sulfur compounds calculated as sulfur dioxide (SO_2) from stationary sources. **Rule 409 –** Combustion Contaminants. Limits total particulate emissions on a density basis. **Rule 431.1 –** Sulfur Content of Gaseous Fuels. Limits sulfur content in gaseous fuels to reduce SOx emissions. **Rule 475 –** Electric Power Generating Equipment. Limits combustion contaminant (PM10) emissions from any equipment with a maximum rating of more than 10 MW used to produce electric power. Combustion contaminants are limited to 11 pounds per hour and 0.01 grains per dry standard cubic feet (gr/dscf) calculated at 3 percent O_2 over 15 consecutive minutes.	emission limit of 4 ppmv at 15 percent oxygen. The SO_2 limit does not apply to the gas turbines will be fired by natural gas. The FDOC demonstrated that the PM loading would be 0.012 grains/dscf for Stanton turbines, which complies with the 0.1 grains/dscf calculated to 12 percent CO2 in Rule 409. The use of commercial grade natural gas ensures the compliance with Rule 431.1. PM10 emissions are 0.004 gr/dscf for both Stanton turbines, which complies with Rule 475.
Regulation XI: Source Specific Standards	Establishes requirements for specific source categories. **Rule 1134 –** Emissions of Oxides of Nitrogen from Stationary Gas Turbines. Establishes NOx limits and monitoring and testing requirements for existing stationary gas turbines. **Rule 1135 –** Emissions of Oxides of Nitrogen from Electric Power Generating Systems. Establishes NOx limits and monitoring and testing requirements for applicable electric power generating systems.	**Consistent:** Stanton turbines are new installations and are not subject to Rule 1134. Stanton turbines do not fall within the meaning of electric power generating system defined in Rule 1135 and this rule is not applicable to Stanton.
Regulation XIII: New Source Review	Establishes the pre-construction review requirements for new, modified or relocated facilities to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards and that future economic growth in the SCAQMD is not unnecessarily restricted. **Rule 1303 –** Requirements. Establishes Best Available Control Technology (BACT), modeling and offset requirements. **Rule 1304/1304.1 –** Exemption. Establishes modeling and offset exemptions for specific categories including electric utility steam boiler replacements. A fee is established for projects utilizing the exemption. **Rule 1313 –** Permits to Operate. Established requirements for BACT and monthly maximum emissions. **Rule 1325 –** Federal PM2.5 New Source Review Program. Outlines requirements for PM2.5 for any new major polluting facility or major modification to a major polluting facility located in areas designated as nonattainment for PM2.5.Establishes the use of lowest	**Consistent:** Stanton is not a major polluting facility for any criteria pollutant. Thus, Rule 1303(a)(1) requires BACT for a minor (non-major polluting) facility for NOx, PM10/PM2.5, SOx, VOC, and ammonia. A complete analysis was performed as required by Rule 1303(b)(1). The modeling demonstrates that Stanton would not cause a violation, or make significantly worse an existing violation of any AAQS. The modeling has been reviewed by SCAQMD and Energy Commission staff. As a minor polluting facility, SCAQMD Rule 1304(d)(1) exemption applies to Stanton. Thus Rule 1303(b)(2) – Offsets is not applicable.

Applicable LORS	Description	Stanton Consistency
	achievable emission rate (LAER), offsets, certification of compliance with emission limits and alternative analysis for applicable projects.	
Regulation XVII: Prevention of Significant Deterioration	Prevention of Significant Deterioration (PSD). Establishes requirements for preconstruction review to ensure that the air quality in attainment does not significantly deteriorate and maintains a margin for future growth. Requirements for PSD review include use of BACT, modeling, and impact analysis. SCAQMD has partial delegation of PSD authority from the U.S. EPA depending on the calculation methodology and plant wide applicability limits. **Rule 1701, 1702, 1706** – Applicability. Establishes applicability requirements for PSD. **Rule 1714 –** Prevention of Significant Deterioration for Greenhouse Gases. Establishes requirements for the review of GHGs.	**Consistent:** Stanton is not subject to PSD review for NOx, PM10, SOx, and CO because the potentials to emit for these attainment pollutants do not exceed the applicability thresholds of 250 tpy.
Regulation XX: Regional Clean Air Incentives Market (RECLAIM)	RECLAIM is designed to allow facilities flexibility in achieving emission reduction requirements for NOx and SOx through controls, equipment modifications, reformulated products, operational changes, shutdowns, other reasonable mitigation measures or the purchase of excess emission reductions. **Rule 2001 –** lists the criterial for inclusion in RECLAIM.	**Consistent:** Stanton has requested a 4 tpy annual NOx limit to stay out of RECLAIM. SCAQMD is also phasing out the RECLAIM program.
Regulation XXX: Title V Permits	The Title V federal program is the air pollution control permit system required by the CAA as amended in 1990. Regulation XXX defines the permit application and issuance as well as compliance requirements associated with the program. Any new or modified major source which qualifies as a Title V facility must obtain a Title V permit prior to construction, operation or modification of that source.	**Consistent:** Stanton is a new facility for which an initial Title V facility permit is required. A proposed Title V permit incorporating permit revisions will be submitted to U.S EPA for a 45-day review. All public participation procedures are required to be followed prior to the issuance of the permit.

ENVIRONMENTAL IMPACT ANALYSIS

SETTING

The proposed project site is in the city of Stanton in Orange County. Stanton would be located in the South Coast Air Basin (SCAB). Stanton is on the coastal plain about 7.8 miles from the Pacific Ocean, and the site can be generally characterized as a Mediterranean type climate. Terrain surrounding the project location is mostly flat or rolling with gradual elevation increases toward the north and northeast. There is no significant terrain between the ocean and the project site.

Stanton site is located at 10711Dale Avenue (west side of street) in the city of Stanton. The site lies approximately 1,100 feet south of West Cerritos Avenue and 1,400 feet north of Katella Avenue. The south boundary of the site is adjacent to the Union Pacific Railroad (UPRR) right-of-way and tracks which cross the immediate project region from east to west. The site lies directly across Dale Avenue from the SCE Barre Peaker and substation facility.

CLIMATE AND METEOROLOGY

The dispersion of pollutants in the atmosphere affects the air quality in the region. Meteorological conditions such as wind velocity, atmospheric turbulence, stability, temperature, and humidity all play a role in how pollutants are dispersed.

The climate of the South Coast Air Basin (basin) is strongly influenced by local terrain and geography. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean on the west, and relatively high mountains forming the north, south, and east perimeters. The climate is mild, tempered by cool sea breezes and is dominated by the semi-permanent high pressure of the eastern Pacific.

Across the 6,600-square-mile basin, there is little variation in the annual average temperature of 62°F. However, the eastern portion of the basin (generally described as the Inland Empire area), experiences greater variability in annual minimum and maximum temperatures as this area is farther from the coast and the moderating effect on climate from the ocean is weaker. All portions of the basin have recorded temperatures well above 100°F. January is usually the coldest month, while the months of July and August are usually the hottest. The majority of the rainfall in the basin falls during the period from November through April. Annual rainfall values range from approximately 9 inches per year in Riverside, to 14 inches per year in downtown Los Angeles. Monthly and annual rainfall totals can vary considerably from year to year. Cloud cover, in the form of fog or low stratus, is often caused by persistent low inversions and the cool coastal ocean water. Downtown Los Angeles experiences sunshine approximately 73 percent of the time during daylight hours, while the inland areas experience a slightly higher amount of sunshine, and the coastal areas slightly less (WRCC 2017).

Wind flow patterns affect air movement in the atmosphere and influence the transport of pollutants to and from the site. Wind roses and wind frequency distribution data were collected at the Anaheim station from 2006-2009 and 2012. The data displays the wind direction, speed and frequency at the monitoring site. The most predominant annual wind direction is from the southwest. There are also less frequent winds from the northeast occurring mostly during the winter. The annual occurrence of calm wind is about 0.14 percent.

Along with the 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 vertical temperature profile influences the atmospheric stability of a region. 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 the basin when there is a higher potential for lower level inversion layers being present along with low speed surface winds.

The southern California coast is characterized by the cooling effect of the ocean on the surface air. As the surface air cools, it becomes denser than the warmer air above it, producing an inversion layer. Inversion layers are formed when temperature increases with height. Inversion layers are present on approximately 87 percent of the days in the year along the southern California coast. The inversion layer forms a stable layer that limits the mixing of air near the surface and therefore pollutants tend to be trapped close to the surface.

The meteorological conditions present affect the formation and concentrations of air pollutants. The potential for high concentrations of pollutants can vary seasonally. Temperature can influence the vertical mixing height and affects chemical and photochemical reaction time. During late spring, summer and early fall, light winds, low mixing heights, and sunshine combine to create an environment favorable to the production of photochemical oxidants, particularly ozone. During the spring and summer, deep marine layers are frequently formed along the southern California coast and sulfate concentrations are at their peak.

Representative meteorological data is used in the dispersion modeling analysis to determine potential project impacts. The SCAQMD and U.S. EPA both have criteria for the data used for modeling. It is generally recommended that meteorological data from the closest station to the project site be used. However, besides proximity, the guidelines also take into consideration the complexity of the terrain, the exposure of the meteorological monitoring site, and the period of time the data is collected.

AMBIENT AIR QUALITY STANDARDS

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

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

Current state and federal ambient air quality standards are listed in **Air Quality Table 2**. The averaging time for the various ambient air quality standards (the duration of time the measurements are taken and averaged) ranges from one hour to one year. The standards are read as a concentration, in parts per million (ppm), parts per billion (ppb), or as a weighted mass of material per unit volume of air, in milligrams (mg or 10^{-3} g) or micrograms (µg or 10^{-6} g) of pollutant in a cubic meter (m^3) of ambient air, drawn over the applicable averaging period.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)[a]	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	53 ppb (100 µg/m^3)	30 ppb (57 µg/m^3)
	1 Hour	100 ppb (188 µg/m^3)[b]	180 ppb (339 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	—	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	75 ppb (196 µg/m^3)[c]	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [b]	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	0.15 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2018a, U.S. EPA 2018 a,b
Note: [a] Fourth- highest maximum 8 – hour concentration, averaged over 3 years.
[b] 98th percentile of daily maximum value, averaged over 3 years
[c] 99th percentile of daily maximum value, averaged over 3 years

EXISTING AMBIENT AIR QUALITY

The U.S. EPA, ARB, and the local air district have established air monitoring plans designed to obtain representative data on the ambient levels of pollutants. This data is used to classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data indicates compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. In general, an area is designated as attainment if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as nonattainment for an air contaminant if the standard is violated.

Exceptional events that are out of human control that create very high pollutant concentrations, such as wind storms and fires, are generally excluded from attainment designations. In circumstances where there is not enough ambient data available to support designations as either attainment or nonattainment, the area can be designated as unclassified or unclassifiable. An unclassified area is normally treated the same as an attainment area for regulatory purposes. In addition, an area could be designated as attainment for one air contaminant while nonattainment for another, or attainment for the federal standard and nonattainment for the state standards for the same air contaminant.

The federal and state attainment status for specified pollutants in the SCAQMD is summarized in **Air Quality Table 3**. This area is designated as nonattainment for the federal and state ozone, and PM2.5 standards, and the state PM10 standards. The SCAQMD is designated as attainment or unclassified for federal PM10 (national 24-hour standard), CO, NO_2, and SO_2.

Air Quality Table 3
Attainment Status of South Coast Air Quality Management District (SCAQMD)

Pollutants	Attainment Status	
	Federal Classification	**State Classification**
Ozone (1-hr)	No Federal Standard[a]	**Nonattainment**
Ozone (8-hr)	**Nonattainment**	**Nonattainment**
CO	Unclassified/Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Attainment	**Nonattainment**
PM2.5	**Nonattainment**	**Nonattainment**
Sulfates	No Federal Standard	Attainment
Lead	**Nonattainment**[b]	Attainment
Hydrogen Sulfide (H2S)	No Federal Standard	Unclassified
Visibility Reducing Particulates	No Federal Standard	Unclassified

Source: ARB 2018b, EPA 2018 a,b.
Note: [a] The federal 1-hour standard was revoked in June 2005, however the South Coast Air Basin has not attained this standard and is subject to anti-backsliding requirements.
[b] Los Angeles County portion of the basin.

There are several monitoring stations located near the project site. The Anaheim monitoring station is located 5.0 kilometers (km) east-northeast from the project site. Because of the lack of significant terrain in the area around the project site and the urban characteristics of the land use in the project area, the Anaheim monitoring station was chosen as the nearest and most representative meteorological data set. Background concentrations of O_3, NO_2, CO, PM10 and PM2.5 were determined using Anaheim monitoring station data. However, ambient concentrations of SO_2 are not available at this station.

The next two nearest monitoring stations are La Habra (13.3 km to the north-northeast) and Costa Mesa (15.9 km to the south-southeast). La Habra monitoring station is located close to complex terrain and is not considered representative of the project site. Therefore, ambient concentrations of SO_2 collected from Costa Mesa station are used for this project.

Nonattainment Criteria Pollutants

Air Quality Table 4 summarizes the existing ambient monitoring data for nonattainment criteria pollutants (ozone and particulate matter) collected from 2011 to 2016 by ARB and SCAQMD from monitoring stations near the project site. Data in this table that are marked in bold and shaded indicate that the most-stringent current standard was exceeded during that period. Note that an exceedance is not necessarily a violation of the standard, and that only persistent exceedances lead to designation of an area as nonattainment.

Ozone

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

Air Quality Table 4
Nonattainment Criteria Pollutants Concentrations, 2011-2016 (ppm or µg/m^3)

Pollutant	Averaging Time	2011	2012	2013	2014	2015	2016
Ozone (ppm)	1 hour	0.088	0.079	0.084	**0.111**	**0.100**	**0.103**
Ozone (ppm)	8 hour	**0.073**	0.068	**0.070**	**0.082**	**0.081**	**0.074**
PM10 (µg/m^3)	24 hour	**53.0**	48.0	**77.0**	**85.0**	**66.0**	**74.0**
PM10 (µg/m^3)	Annual	**24.7**	**22.3**	**25.2**	**26.8**	**24.8**	**24.4**
PM2.5[a] (µg/m^3)	24 hour	28.1	25.0	22.7	34.4	29.8	24.0
PM2.5 (µg/m^3)	Annual	10.9	10.8	10.0	10.5	9.4	9.5

Source: SCAQMD 2017, ARB 2018c, U.S.EPA 2018c.
Note: [a] The 24-hour PM 2.5 concentrations are the 98th percentile highest daily 24-hour average PM2.5 concentrations during that year.

Respirable Particulate Matter (PM10)

PM10 is a mixture of small solid particles and liquid droplets with a size less than or equal to 10 microns diameter. PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, SOx and VOC from turbines, and ammonia from NOx control equipment, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted but are formed through complex chemical reactions in the atmosphere.

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NOx emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM10, and an even higher contributor to particulate matter of less than 2.5 microns (PM2.5), described more fully below. The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) or sodium nitrate.

As shown in **Air Quality Table 4**, the federal 24-hour PM10 standard of 150 µg/m^3 has never been exceeded at the stations near the project site from 2011 through 2016. However, the CAAQS 24-hour standard of 50 µg/m^3 has been exceeded in 2011 and 2013-2016. The maximum 24-hour concentration recorded during the analysis period was 85.0 µg/m^3 in 2014. The maximum annual concentration was 26.8 µg/m^3 in 2014. The SCAQMD is characterized as attainment for federal PM10 standard but nonattainment for state PM10 standard.

Fine Particulate Matter (PM2.5)

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

Air Quality Table 4 summarizes the ambient PM2.5 data collected from the Anaheim station. The national 24-hour average NAAQS is met if the 3-year average of the 98th percentile concentration is 35 µg/m^3 or lower. This threshold has never been exceeded from 2011 to 2016. The annual arithmetic means during the 2011-2016 period are also below the federal standard of 15 µg/m^3 and the state standard of 12 µg/m^3. For purpose of state and federal air quality planning and permitting, the SCAQMD is nonattainment with both federal and state PM2.5 standard.

Attainment Criteria Pollutants

Nitrogen Dioxide (NO_2)

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

$$NO + O_3 \longrightarrow NO_2 + O_2$$

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

The U.S. EPA implemented a new 1-hour NO_2 standard of 0.1 ppm, which became effective on April 12, 2010. The new standard is expressed as a 3-year average of the 98^{th} percentile of the *daily maximum* 1-hour concentration (i.e., the 8^{th} highest of daily highest 1-hour concentrations). **Air Quality Table 5** shows the maximum 1-hour NO_2 concentrations at the Anaheim station. Data from 2011 to 2016 show that NO_2 concentrations measured at this station have never exceeded either the federal or state standards. The SCAQMD is currently designated as unclassified for federal NO_2 standard but attainment for the state NO_2 standard.

Carbon Monoxide

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

Sulfur Dioxide

Sulfur dioxide is typically emitted as a result of the combustion of fuels containing sulfur. This proposed project would use natural gas, which contains very little sulfur and consequently has very low SO_2 emissions when burned. By contrast, fuels with high sulfur content, such as coal, emit very large amounts of SO_2 when burned. Sources of SO_2 emissions come from every economic sector and include a wide variety of fuels in gaseous, liquid and solid forms. The whole state is designated attainment for all state and federal SO_2 ambient air quality standards. See **Air Quality Table 5** for maximum 1-hour, federal 1-hour, and 24-hour SO_2 concentrations at the Costa Mesa station.

Air Quality Table 5
Attainment Criteria Pollutants Concentrations, 2011-2016 (ppm)

Pollutants	Averaging Time	2011	2012	2013	2014	2015	2016
NO_2	1 hour	0.074	0.067	0.082	0.075	0.059	0.064
NO_2	Federal 1 hour	0.061	0.054	0.059	0.060	0.055	0.057
NO_2	Annual	0.017	0.015	0.018	0.015	0.015	0.015
CO	1 hour	2.7	3	3.4	3	3.1	2.6
CO	8 hours	2.1	2.3	2.6	2.1	2.2	2.1
SO_2	State 1 hour	0.0077	0.0062	0.0041	0.0088	0.0045	0.0033
SO_2	Federal 1 hour (99^{th} Percentile)	0.007	0.002	0.003	0.004	0.003	0.002
SO_2	24 hours	0.0013	0.0009	0.0012	0.0014	0.0011	--

Source: SCAQMD 2017, ARB 2018c, U.S.EPA 2018c.

Lead

The portion of the SCAB where the project would be located is attainment for both the federal and stated lead standards, as shown above in **Air Quality Table 3**. Also, expected lead emissions from the proposed facility are zero, as shown in **Air Quality Table 22** below. Therefore, lead impacts are not evaluated further in this analysis.

SUMMARY OF BACKGROUND AMBIENT AIR QUALITY

In summary, staff recommends using the background ambient air quality concentrations in **Air Quality Table 6** as the baseline for the modeling and impacts analysis. The highest criteria pollutant or average concentrations from the last three years of available data collected from the surrounding monitoring stations are used to determine the recommended background values. Concentrations in excess of their ambient air quality standard are shown in bold.

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

Air Quality Table 6
Staff-Recommeded Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Background	Limiting Standard	Percent of Standard
PM10	24 hour	**85**	50	**168**
	Annual	**26.8**	20	**134**
PM2.5	24 hour	34.4	35	86
	Annual	10.5	12	88
CO	1 hour	3,565	23,000	17
	8 hour	2,444	10,000	29
NO_2	State 1 hour	141	339	45
	Federal 1 hour	112.8	188	60
	Annual	28.2	57	60
SO_2	1 hour	23.0	655	4
	Federal 1 hour	10.5	196	5
	24 hour	3.7	105	4

Source: ARB 2018c, U.S.EPA 2018c and independent staff analysis.
Note: An exceedance is not necessarily a violation of the standard, and that only persistent exceedances lead to designation of an area as nonattainment.

PROJECT DESCRIPTION AND PROPOSED EMISSIONS

Stanton would consist of two GE LM6000 PC-based EGTs. Separate emissions estimates for the proposed project during the construction phase, initial commissioning, and operation are each described in the following sections.

CONSTRUCTION

Construction of Stanton is expected to last approximately 12 months. Construction is anticipated to commence as early as November 2018. Actual construction activities would occur during months 1 through 12, while commissioning, testing, and startup would occur in months 11 and 12. The peak construction workforce is expected to be on site during months 7 and 8. Offsite linears are assumed to be constructed during months 4 through 6.

The construction would occur in the following four main phases:

- Mobilization and site preparation
- Foundation work
- Construction/installation of major structures and equipment
- Commissioning, testing, and startup

The main site consists of two parcels for a total of approximately 3.978 acres (only 3.173 acres will be disturbed during construction). The construction laydown area would be contained within the site. The site is currently level, and as such, the site would require only minimum grading and leveling prior to construction of the power block and support systems. Site preparation includes finish grading, excavation of footings and foundations, and backfilling operations. After site preparation is finished, the construction of the foundations and structures is expected to begin. Once the foundations and structures are finished, installation and assembly of the mechanical and electrical equipment are scheduled to commence. The proposed offsite linears (gas line, underground transmission line, water line, and sewer line) are anticipated to create a disturbance area equal to 4.59 acres.

During the construction period, air emissions would be generated from: 1) vehicle and construction equipment exhaust; 2) fugitive dust from vehicle and construction equipment, including grading, bulldozing and truck loading during construction.

Emissions of NOx, SOx, VOC CO, PM10 and PM2.5 were quantified for the construction period. Maximum daily and annual emissions were estimated based on the expected construction equipment and workforce. Construction activities were assumed to be scheduled for 8 hours per day, 5 days per week and 22 days per month. Vehicle exhaust emissions were estimated using EMFAC 2007. Fugitive dust emissions would be mitigated with watering. The control efficiency for mitigation was determined per SCAQMD's CEQA Air Quality Handbook.

Estimated daily, monthly and total annual emissions over the 12-month construction period for the onsite activities are included in **Air Quality Table 7**.

Air Quality Table 7
Stanton, Estimated On-Site Construction Emissions

Construction Activity	NOx	VOC	PM10	PM2.5	CO	SOx
Daily Construction Emissions (lbs/day)	35.48	4.92	7.65	3.0	27.35	0.06
Monthly Construction Emissions (lbs/month)	780.6	108.3	168.30	65.93	601.7	1.41
Annual Construction Emissions (tons/year)	4.684	0.650	1.01	0.396	3.610	0.008

Source: SERC 2016a, SERC 2018g.

Estimated emissions for the offsite construction activities are included in **Air Quality Table 8**.

Air Quality Table 8
Stanton, Estimated Off-Site Construction Emissions

Construction Activity	NOx	VOC	PM10	PM2.5	CO	SOx
Daily Construction Emissions (lbs/day)	46.9	6.43	19.5	6.41	39.43	0.15
Monthly Construction Emissions (lbs/month)	1032.6	141.4	429.9	141.1	867.4	3.23
Annual Construction Emissions (tons/year)	6.196	0.848	2.579	0.847	5.204	0.019

Source: SERC 2016a, SERC 2018g.

INITIAL COMMISSIONING

New electrical generation facilities must go through initial commissioning phases before becoming commercially available to generate electricity. The commissioning period begins when the turbines are prepared for first fire and ends upon successful completion of initial performance testing. Emissions of NOx, CO, and VOC during the commissioning period are typically higher than during normal operations due to the fact that the combustors may not be optimally tuned and the emission control systems may be only partially operational or not operational at all. The commissioning period is needed to ensure the facility's operation is fine-tuned to minimize emissions during normal operations. The emission rates for PM10, PM2.5 and SOx during initial commissioning are not expected to be higher than normal operating emissions. PM and SOx emissions are proportional to fuel use and the potential maximum fuel use and not the emission control equipment. Emissions from PM10, PM2.5 and SOx are expected to be at or below emissions from full load operations.

During the first year of operation, the commissioning activities for Stanton turbines are expected to last 200 hours in total for both turbines. During this period, each combustion turbine would require 100 hours of operation without or with partial emission control systems in place. Unabated commissioning activities include: 1) first fire and full speed, no load, no generator excitation (8 hours), 2) first fire and full speed, no load, generator excitation checks (6 hours), 3) first synchronization (6 hours), 4) synchronization and ramp to full load, tuning water, ammonia, gas compressor tuning (12 hours), and 5) full load operation with water injection and spray, intercooled (SPRINT) in service for exhaust duct curing (8 hours). Abated commissioning activities include full load operation with water injection and SPRINT in service and SCR/ammonia tuning (60 hours).

Air Quality Table 9 presents the applicant's anticipated maximum commissioning emissions of criteria pollutants.

Air Quality Table 9
Stanton, Estimated Initial Commissioning Emissions

	Maximum Commissioning Emissions				
	NOx	**CO**	**VOC**	**SOx**	**PM10/2.5**
Two Turbines (lb/hr)[a]	85.62	110.60	17.92	2.04	6.00
Two Turbines (lbs/day)[a]	2054.88	2654.40	430.08	48.91	144.0
Two Turbines (tons/year)	1.90	0.48	0.145	0.07	0.30

Source: SERC 2016a, SCAQMD 2018g and staff analysis.
Note: [a] Total facility emissions for two turbines, conservatively assuming commissioning of both turbines simultaneously.

PROPOSED OPERATION

After commissioning, the turbines have different operational modes: startup, shutdown and normal or steady state operation. **Air Quality Table 10** lists the maximum hourly, daily and annual emissions from the proposed project estimated by the applicant. Emissions for NOx, CO, and VOC during startup and shutdown events would have higher emissions than during normal operation because the emission control systems are not fully functional or within the operating temperature range. Therefore the maximum hourly NOx, CO and VOC emissions are based on a worst-case startup event at 40°F ambient temperature, defined as two 15-minute startup events, two 10-minute shutdown events, with the turbine stack emissions in BACT compliance for the remainder of the startup hour at steady-state compliance conditions. Since PM10/PM2.5 and SOx emissions are proportional to fuel use, PM10/PM2.5 and SOx have higher emissions rates during full-load operation. Therefore the maximum hourly PM10/PM2.5 and SOx emissions are based on each trubine operating at full load at 40°F ambient temperature.

The worst case for daily NO_X, CO, and VOC emissions is defined as four startup events, four shutdown events, and 21.5 hours of full load operation (40°F ambient temperature) for a total of 24 hours of operation. The worst case for daily SO_2 and PM10/2.5 emissions is based on base load (40°F ambient temperature) operation for the entire 24 hours with no startups or shutdowns.

Three operation profiles were examined by the applicant to estimate the maximum annual emissions, including 1) 500 startups, 500 shutdowns and 430 hours of full load operations at 65°F annual average ambient temperature, 2) 100 startups, 100 shutdowns and 808 hours of full load operations at 65°F annual average ambient temperature, and 3) 1 startup, 1 shutdown and 902 hours of full load operations at 65°F annual average ambient temperature. For NO_X, CO, and VOC, the maximum annual emissions are based on case 1), which has the most startups and shutdowns per year. For SO_2 and PM10/2.5, case 3) has the highest emissions, which has the largest number of base load hours per year.

Air Quality Table 10
Stanton, Maximum Emissions Rates during Routine Operation

	NOx	CO	VOC	SOx	PM10/2.5
Total Maximum Hourly Emission (lbs/hr)	6.72	8.08	3.17	1.02	3.00
Total Maximum Daily Emission (lbs/day)	232.3	238.06	74.56	47.3	144.32
Total Maximum Annual Emission (tons/year)	3.92	4.58	1.72	0.30	2.70

Source: SERC 2016a, SCAQMD 2018g and staff analysis.

Ammonia Emissions

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

The applicant reported that the maximum ammonia emission from the turbine is 5.0 ppmvd @15 percent O_2. This is also the level listed in the SCAQMD BACT guidelines for combustion turbine power plant projects. Energy Commission staff notes that control systems can be operated and maintained to routinely achieve less than 5.0 ppmvd @15 percent O_2 for ammonia slip, as established in the Guidance for Power Plant Siting. Staff recommends that the SCAQMD impose a 5.0 ppm at 15 percent oxygen by dry volume ammonia limit on this project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Potential impacts from Stanton result from the proposed construction, initial, commissioning, and normal operation phases, and cumulative effects. The cumulative impacts analysis assesses impacts that result from the proposed project's incremental effect combined with other emission sources. The project's incremental effect is viewed over time 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), 15065I, 15130, and 15355). Additionally, cumulative impacts are assessed in terms of conformance with the District's attainment or maintenance plans.

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

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

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

DIRECT/INDIRECT IMPACTS AND MITIGATION

Ambient air quality impacts occur when project emissions cause the ambient concentration of a pollutant to increase. Project-related emissions are the actual mass of emitted pollutants, which are dispersed in the atmosphere before reaching the ground. Impacts refer to the concentration of any pollutant that reaches the ground level. An impact analysis includes quantifying the emissions released from the proposed equipment and the use of an atmospheric dispersion model to determine the probable impact at ground level. The analysis focuses on the predicted change to the ground level concentration due to the additional emissions from the proposed project.

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 ($\mu g/m^3$).

The applicant conducted air dispersion modeling based on guidance presented in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W) and the American Meteorological Society/Environmental Protection Agency Regulatory Model known as AERMOD (version 15181). The U.S. EPA designates AERMOD as a “preferred” model for refined modeling in all types of terrain. AERMOD considers emissions in the context of various ambient meteorological conditions, local terrain and nearby structures that could affect air flow.

The inputs for the air dispersion models include stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine emission data and meteorological data, such as wind speed and atmospheric conditions, and site elevation. For the proposed Stanton, the meteorological data collected at the Anaheim station were selected for the modeling because the station is the closest to the proposed site, there is no complex terrain between the station and the proposed site, and the land uses surrounding the monitoring site and Stanton are similar.

Anaheim station meteorological data was compiled by the SCAQMD for the dispersion modeling analysis. The compiled data includes years 2006 -2009 and 2012. Data from 2010 and 2011was not provided by the SCAQMD due to incompleteness. The complied data was provided by the SCAQMD to the applicant to be processed through AERMET.

U.S. EPA approved NO_2 to NOx conversion ratios of 0.80 and 0.75 are assumed for evaluating 1-hour and annual NO_2 impacts from the project respectively. The base modeling receptor grid for AERMOD modeled impacts consists of receptors placed at the project’s property boundary and Cartesian-grid receptors that are placed beyond the project’s site boundary at spacing that increases with distance from the origin.

Project-related modeled concentrations are added to the highest background concentrations to calculate compliance with AAQS. This is a conservative approach because it assumes the highest project impacts occur concurrently with the worst case background concentrations. Staff revised the background concentrations provided by the applicant where necessary to reflect the most recent worst case background values. The background values used by staff are the values in **Air Quality Table 6**. Staff combined the applicant modeled impacts with the appropriate background concentrations, and compared the results with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new exceedance of the ambient air quality standards or would contribute to an existing exceedance.

CONSTRUCTION IMPACTS AND MITIGATION

This section discusses the project's direct construction ambient air quality impacts assessed by the applicant and, as necessary, independently assessed by Energy Commission staff. The ambient air quality impacts are modeled using AERMOD. Construction modeling for Stanton used five years of meteorological data (2006-2009 and 2012 from Anaheim station) prepared by SCAQMD.

Air Quality Table 11 summarizes the results of the modeling analysis for construction activities. The total impact is the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for project activity. The values in **bold** and shaded in the Total Impact and Background columns represent the values that either equal or exceed the relevant ambient air quality standard.

Air Quality Table 11 shows that PM10 emissions from construction would contribute to existing violations of PM10 ambient air quality standards. This is mainly because the background concentrations already exceed the state standards. Background PM2.5 levels are near the standards and PM2.5 emissions from construction would also cause new exceedances of the state 24-hour standard and make the annual impact very close to the ambient air quality standard. Therefore, staff believes that particulate matter emissions from construction would cause significant impacts. Those emissions can and should be mitigated to a level of less than significant. Significant secondary impacts would also occur for PM10, PM2.5, and ozone because construction-phase emissions of particulate matter precursors (including SOx) and ozone precursors (NOx and VOC) would also contribute to existing violations of these standards.

As shown in **Air Quality Table 11**, the direct impacts of NO_2, in conjunction with worst-case background conditions, would not create a new exceedance of the current annual or 1-hour NO_2 state ambient air quality standard. Compliance with the new federal 1-hour NO_2 standard, which is averaged over three years, is not evaluated because the construction is less than 3 years. The direct impacts of CO and SO_2 would not be significant because construction of the project would neither cause nor contribute to an exceedance of these standards.

Air Quality Table 11
Stanton, Construction-Phase Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total	Limiting Standard	Percent of Standard
PM10	24 hour	28.1	**85**	**113.1**	**50**	**226**
	Annual	7.8	**26.8**	**34.6**	**20**	**173**
PM2.5	24 hour	4.0	34.4	**38.4**	**35**	**110**
	Annual	1.17	10.5	11.67	12	97
CO	1 hour	28.35	3,565	3593.35	23,000	16
	8 hour	13.7	2,444	2457.7	10,000	25
NO_2	State 1 hour	29.4	141	170.4	339	50
	Annual	1.01	28.2	29.21	57	51
SO_2	State 1 hour	0.07	23.0	23.07	655	4
	24 hour	0.01	3.7	3.71	105	4

Source: SERC 2016a, SERC 2018g with independent staff analysis.

Construction Mitigation

The applicant proposes the following mitigation measures to reduce the exhaust emissions from the diesel heavy equipment and fugitive dust emissions during the construction of the project:

- 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 mitigation 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 three times per day 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 500 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 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.
- The applicant will work with the construction contractor to utilize to the extent feasible, EPA-ARB Tier 2/Tier 3 engine compliant equipment for equipment over 100 horsepower.
- Insure periodic maintenance and inspections per the manufacturers' 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 mirror many of staff's mitigation recommendations from previous siting cases. However, staff proposes incorporation of additional off-road equipment mitigation measures beyond those proposed by the applicant.

Staff Proposed Mitigation

Additional measures recommended by staff would reduce construction-phase impacts to a less than significant level by further limiting construction emissions of particulate matter and combustion contaminants. Staff believes that the short-term and variable nature of construction activities warrants a qualitative approach to mitigation. Construction emissions and the effectiveness of mitigation varies widely depending on variable levels of activity, the specific work taking place, the specific equipment, soil conditions, weather conditions, and other factors, making precise quantification of

emissions and air quality impacts difficult. Despite this uncertainty, there are a number of feasible control measures that can and should be implemented to significantly reduce construction emissions. Staff has determined that the use of oxidizing soot filters is a viable emissions control technology for all heavy diesel-powered construction equipment that does not use an ARB-certified low emission diesel engine. In addition, staff proposes that prior to beginning construction, the applicant should provide an Air Quality Construction Mitigation Plan (AQCMP) that specifically identifies mitigation measures to limit air quality impacts during construction.

Staff proposes Conditions of Certification **AQ-SC1** through **AQ-SC5** to implement these requirements. These conditions update the applicant's proposed mitigation to be consistent with the conditions of certification adopted in similar prior Energy Commission licensing cases. Compliance with these conditions is expected to greatly reduce or eliminate the potential for significant adverse air quality impacts during construction of the proposed Stanton.

Staff is proposing Conditions of Certification **AQ-SC1** through **AQ-SC7**. Condition of Certification **AQ-SC1** requires an Air Quality Construction/Demolition Mitigation Manager to ensure compliance with the staff conditions for construction/demolition activities. Condition of Certification **AQ-SC2** would require a plan detailing the steps necessary to limit emissions from construction/demolition activities outlined in the conditions of certification. Condition of Certification **AQ-SC3** would require mitigation for fugitive dust control. The proposed mitigation is standard for Energy Commission projects and is similar to what was proposed by the applicant. Condition of Certification **AQ-SC4** would also require monthly reports to be submitted documenting compliance with the requirements. Condition of Certification **AQ-SC4** outlines monitoring requirements for dust from construction activities to ensure adequacy of the proposed mitigation. Condition of Certification **AQ-SC5** would require diesel-fueled engine control and ensure that the cleanest engines available are used to protect public health and for consistency with the construction impact modeling. Condition of Certification **AQ-SC6** would require the applicant to provide copies to the Energy Commission compliance project manager (CPM) of all air permits issued by the SCAQMD including any proposed modification. Condition of Certification **AQ-SC7** would require quarterly reports to ensure ongoing compliance during commissioning and routine operation.

OPERATION IMPACTS AND MITIGATION

The following section discusses the project's operation air quality impacts, as estimated by the applicant and subsequently evaluated by staff. The applicant performed a number of direct impact modeling analyses for routine operations including start up and shutdown scenarios, shoreline fumigation and inversion break-up, commissioning activities, and whole facility overlap scenarios.

Routine Operation Impacts

Emissions and operating parameters exhibit variation with ambient temperature and operating load. To determine the worst case air quality impacts a dispersion modeling analysis was conducted at various load scenarios and at three different temperature: 40°F (cold temperature day), 65°F (annual average conditions), and 102.7°F (high temperature day). Source parameters were provided by the manufacturer for the different scenarios.

The worst case 1-hour NO_2 and CO impacts reflect startup impacts, and all other impacts reflect impacts that would occur during normal operation. The modeled impacts are extremely conservative, since the maximum impacts are evaluated under a combination of highest allowable emission rates, the most extreme meteorological conditions, and worst case background values, which are unlikely to all occur simultaneously. Emissions rates are shown in **Air Quality Table 10**. The predicted maximum concentrations of criteria pollutants are summarized in **Air Quality Table 12**. The values shown in bold and shaded means they exceed ambient air quality standards.

Air Quality Table 12
Stanton, Routine Operation Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total	Limiting Standard	Percent of Standard
PM10	24 hour	0.5	**85**	**85.5**	**50**	**171**
	Annual	0.02	**26.8**	**26.8**	**20**	**134**
PM2.5	24 hour [a]	0.5	34.4	34.9	35	99
	Annual	0.02	10.5	10.52	12	88
CO	1 hour	9.3	3,565	3574	23,000	16
	8 hour	2.2	2,444	2446	10,000	24
NO_2 [b]	State 1 hour	6.2	141	147.2	339	43
	Federal 1 hour [c]	2.5	112.8	115.3	188	61
	Annual	0.02	28.2	28.22	57	50
SO_2	State 1 hour	0.4	23.0	23.4	655	4
	Federal 1 hour [d]	0.4	10.5	10.9	196	6
	24 hour	0.07	3.7	3.77	105	4

Source: SERC 2016a, SCAQMD 2018g with independent staff analysis.
Note:
[a] Total predicted concentration for the federal 24-hour PM2.5 standard is the maximum modeled concentration combined with the 3-year average of 98th percentile background concentrations.
[b] The maximum 1-hour and annual NO_2 concentrations include ambient NO_2 ratios of 0.80 and 0.75 respectively.
[c] Total predicted concentration for the federal 1-hour NO_2 standard is the maximum modeled concentration combined with the 3-year average of 98th percentile background concentrations.
[d] Total predicted concentration for the federal 1-hour SO_2 standard is the maximum modeled concentration combined with the 3-year average of 99th percentile background concentrations.

Air Quality Table 12 shows that PM10 emissions from the project will cause a significant impact, which would contribute to existing violations of PM10 ambient air quality standards. The impacts of PM2.5 emissions are close to the most stringent standards due to the existing high background concentrations, but would not create new violations.

The direct impacts of NO_2, in conjunction with worst-case background conditions, would not create a new violation of the current federal or state NO_2 ambient air quality standard, including the new federal 1-hour NO_2 standard. The direct impacts of CO and SO_2 would not be significant because routine operation of the project would neither cause nor contribute to a violation of these standards. Mitigation for emissions of PM10, PM2.5, SOx, NOx, and VOC would be appropriate for reducing impacts to PM10, PM2.5, NO_2, and ozone.

Secondary Pollutant Impacts

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

Ozone Impacts

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 future ozone levels. Currently, there are no regulatory agency models approved for assessing single-source ozone impacts although guidance documents are becoming available. 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 the Stanton project do 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 formation, which is assumed to be 100 percent PM2.5, 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 limited*. 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 limited environment, there is

insufficient ammonia to establish a balance and thus additional ammonia would tend to increase PM2.5 concentrations.

The U.S. EPA issued guidance on December 2, 2016 that requires secondary PM2.5 impacts to 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. Stanton has been determined to not require PSD permitting, so this type of modeling analysis is not required.

Ammonia (NH_3) is a particulate precursor but not a criteria pollutant because there is no ambient air quality standard for ammonia. Reactive with sulfur and nitrogen compounds, ammonia can be found from natural sources, agricultural sources, and as a byproduct of tailpipe controls on motor vehicles and stack controls on power plants.

Energy Commission staff recommends limiting ammonia slip emissions to the maximum extent feasible. This level of control is appropriate for avoiding unnecessary ammonia emissions, consistent with staff policy to reduce emissions of all nonattainment pollutant precursors to the lowest feasible levels.

Commissioning-Phase Impacts

The commissioning activities for the combustion turbine are expected to last no more than 200 hours total for both turbines during the first year of operation. The applicant provided the commissioning emissions estimates in **Air Quality Table 9**. The worst-case short-term NO_X and CO commissioning emissions are 42.81 lbs/hr/turbine and 55.30 lbs/hr/turbine, respectively and would occur prior to the installation of the catalyst. The federal 1-hour NO_2 standard is expressed as a 3-year average of the 98th percentile of the daily maximum 1-hour concentration. Since this is a statistically based standard averaged over three years, it is not applicable to the short-duration commissioning phase. Staff does not expect it to have significant impact due to the very limited commissioning period compared to the 3-year averaging time used for the standard. The annual NO_2 impact is also not evaluated due to the short commissioning period. Impacts due to PM10, PM2.5, and SO_2 during commissioning would occur under similar exhaust conditions as those for startup while in routine operation because these emissions are proportional to fuel use. Therefore, short-term SO_2 and PM10/2.5 emissions during commissioning activities will be the same as for normal operations. **Air Quality Table 13** shows that the commissioning phase emissions will not cause new exceedances of any state or federal ambient air quality standard.

Air Quality Table 13
Stanton, Commissioning Phase Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total	Limiting Standard	Percent of Standard
CO	1 hour	63.8	3,565	3,629	23,000	16
	8 hour	21.3	2,444	2,465	10,000	25
NO_2	1 hour (state)	39.5	141	181	339	53

Source: SERC2016a, SCAQMD 2018g with independent staff analysis.

Fumigation Impacts Fumigation Modeling Impact Analysis

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

Fumigation conditions are short-duration events and are generally only compared to short term standards. Fumigation is analyzed using the AERSCREEN model for inversion breakup conditions. Inversion breakup fumigation occurs under low-wind conditions when a rising morning mixing height caps a stack (i.e., is at or right above the stack height) limiting plume rise and mixing, which fumigates the air below. Shoreline fumigation is not assessed since the nearest distance to the shoreline of any large bodies of water is greater than 3 kilometers.

The applicant completed a fumigation analysis using the U.S. EPA AERSCREEN (Version 15181) model. The analysis considered three operating scenarios and loads included in the Routine Operation Analysis previously discussed using regulatory default mixing heights. Only short-term averaging times were evaluated for three operating cases (as fumigation impacts are generally expected to occur for 90-minutes or less). The unitized fumigation impacts are shown in **Air Quality Table 14** and were compared to the maximum AERSCREEN impacts for flat terrain. All of the fumigation impacts are less than the AERSCREEN maxima predicted to occur under normal dispersion conditions anywhere offsite. Since fumigation impacts are less than the maximum overall AERSCREEN impacts, no further analysis of additional short-term averaging times is required as described in Section 4.5.3 of EPA-454/R-92-019 (EPA, 1992a). Thus, the overall modeling analysis impacts are conservative with respect to fumigation impacts, and no pollutant-specific fumigation results are presented.

Air Quality Table 14
Maximum Fumigation Impacts

Averaging Time (Unitized Impacts for 1g/s)	65°F Average Ambient Conditions, 100% Load		40°F Cold Ambient Conditions, 100% Load		40°F Cold Ambient Conditions, 20% Load	
	Fumigation Impacts	Flat Terrain Impacts	Fumigation Impacts	Flat Terrain Impacts	Fumigation Impacts	Flat Terrain Impacts
1-hour ($\mu g/m^3$)	2.465	5.032	2.436	4.914	4.542	23.71
3-hour ($\mu g/m^3$)	2.465	5.032	2.436	4.914	4.542	23.71
8-hour ($\mu g/m^3$)	2.219	4.529	2.192	4.422	4.088	21.33
24-hour ($\mu g/m^3$)	1.479	3.019	1.461	2.948	2.725	14.22
Distance (m)	7,850	213	7,920	216	5,019	64

Source: SERC 2017b and staff analysis.

Based on the applicant's analysis, SCAQMD conducted additional analysis using AERSCREEN (version 16216). The modeling parameters for the worst-case operating scenarios were used for each of the modeled pollutants and averaging times. The reason for the additional analysis is that the inversion break-up impacts were found to occur 5 – 7 km away from the facility and were slightly higher than normal operation impacts at that distance. **Air Quality Table 15** shows that the inversion break-up impacts, combined with background concentrations, are below the applicable ambient air quality standards.

Air Quality Table 15
Maximum Fumigation Impacts

Pollutant	Averaging Time	Modeled Impact	Background	Total	Limiting Standard	Percent of Standard
CO	1 hour	2.7	3,565	3568	23,000	16
	8 hour	2.4	2,444	2446	10,000	24
NO_2	State 1 hour	2.2	141	143.2	339	43
SO_2	State 1 hour	0.6	23.0	23.6	655	4

Source: SCAQMD 2018g and staff analysis.

Mitigation for Routine Operation

The applicant is proposing to mitigate the proposed project's NOx, VOC, SOx, and PM10 emissions through the use of BACT. BACT includes limiting the ammonia slip emissions to 5 ppm. The equipment description, equipment operation, and emission control devices are provided in **Project Description and Proposed Emissions** (above). The applicant did not propose any emission offsets as Stanton will be a minor New Source Review (NSR) source.

Emission Controls

Stanton proposes the use of water injection with selective catalytic reduction (SCR) to control NOx emissions to 2.5 ppmvd (1-hour average). The BACT for CO emissions is best combustion design and the installation of the oxidation catalyst system to reduce CO to 4.0 ppmvd (1-hour). The BACT for VOC emissions is best combustion design and the installation of an oxidation catalyst system to control VOC emissions to 1.0 ppmvd (1-hour). Best combustion practice and use of pipeline-quality natural gas limit PM10/PM2.5 emissions to 3 lb/hr. Operating exclusively on low sulfur pipeline quality natural gas with fuel sulfur content of no more than 0.25 grain per 100 standard cubic feet long term, and 0.75 grain per 100 standard cubic feet short term, limits SOx emissions.

GHG pollutants are emitted during the combustion process when fossil fuels are burned. GHG BACT for Stanton combustion turbines is proposed as follows:

- Use of clean fuels (firing natural gas exclusively in the turbines).
- Maintain compliance with the NSPS Subpart TTTT emissions limits as specified in 40 CFR 60.5520, Table 2, as applicable.1
- Maintain heat rates for simple-cycle operations at levels equal to or less than 8651 Btu/kW-hr (LHV), based on the averages for 100 percent load for cold, ISO, and hot day performance data.
- Compliance with the lbs CO2/MWh (net) and heat rate values will be based on 12-month rolling averages.

The facility-wide CO_2e emissions of Stanton are estimated to be less than or equal to 60,000 tons/year. See Air Quality Appendix Air-1 for more discussion of greenhouse gases.

Emission Offsets

Air Quality Table 16 shows Stanton annual emissions and the SCAQMD offset trigger thresholds. Based on the facility annual emissions, Stanton will not trigger the PSD program for NOx, VOC, SOx, and PM10 and CO. The applicant concludes that Stanton is required to acquire emission reduction credits to offset project emissions under NSR Rule 1304 (d)(1)(A).

Air Quality Table 16
SCAQMD Emission Offsets Required by Stanton

	NOx	VOC	SOx	PM10	CO
Stanton PTE (tpy)	3.92	1.72	0.30	2.70	4.58
SCAQMD Offset Trigger Thresholds (tpy)	4	4	4	4	29
SCAQMD Offsets Required	No	No	No	No	No

Source: SCAQMD 2018g.

The applicant did not propose any CEQA offsets or other types of CEQA mitigation for its criteria pollutants emissions either. Instead the applicant retained ZGlobal to conduct a study to quantify the potential emissions reduction due to the implementation of Stanton (SERC 2018a). Utilizing PLEXOS integrated Energy Model for production cost simulation, the ZGlobal Study considered predicted dispatches and operations of a whole host of gas-fired generation sources located within the South Coast Air Basin, and serving SCE and/or the CAISO market for 2020. Based on the predicted changes in operation for both with and without Stanton conditions, the emissions from the affected facilities were estimated. The applicant predicted that the operation of Stanton will lead to emission reduction greater than Stanton's PTE for all pollutants. Therefore, the applicant concluded that operation of Stanton will not result in any net emissions increase of criteria pollutants within the South Coast Air Basin and would not result in impacts requiring CEQA mitigation.

Adequacy of Proposed Mitigation

Emission Controls

As discussed above, the applicant proposes to employ SCR with water injection, an oxidation catalyst, and to operate exclusively on pipeline quality natural gas to limit combustion turbine emission levels. The SCAQMD completed a detailed BACT evaluation for Stanton with the proposed BACT limits outlined above. Staff concurs with the SCAQMD's determination that the project's proposed emission controls/emission levels for criteria pollutants and ammonia slip meet BACT requirements.

Emission Offsets

SCAMD Rule 1303(b)(2) requires a net increase in emissions of any nonattainment air contaminant or precursors to a nonattainment air pollutant (NOx, VOC, PM10, and SOx) from a new or modified source to be offset unless exempt from offset requirements pursuant to Rule 1304. The facility's maximum expected potential-to emit emissions for NOx (3.92 tpy), VOC (1.72 tpy), PM10 (2.70 tpy), and SOx (0.3 tpy) for the two turbines are each less than 4 tpy, SCAQMD's threshold for requiring offsets based on Rule 1304 (d)(1)(A), Table A. Since CO is an attainment pollutant and not a precursor to any nonattainment pollutant, no offsets are required for CO. Therefore, SCAQMD determined that Stanton would be exempt from providing emission offsets. Instead, SCAQMD would obtain offsets for Stanton from SCAQMD's internal accounts.

The Energy Commission mitigation requirements under CEQA are different than the SCAQMD offset requirements. Since Energy Commission staff normally recommends mitigation based on impacts, the district emissions thresholds may not alleviate the need for mitigation. Staff considers impacts from direct emitted emissions, and those from precursor emissions on secondary emissions standards. Staff's expectation is that the Energy Commission would require CEQA mitigation of emissions of all nonattainment criteria and precursor pollutants of NOx, VOC, SOx, PM10 and PM2.5 for this proposed facility, generally on at least a one-to-one ratio.

Based on the ZGlobal Study (SERC 2018a), the applicant concluded that operation of Stanton would result in a net emissions decrease of criteria pollutants within the South Coast Air Basin and therefore the facility would not trigger the need for CEQA mitigation. Staff does not agree that the PLEXOS Integrated Energy Model used in the ZGlobal study is sufficient to exempt the facility from the CEQA mitigation because:

1. The PLEXOS model is described as a useful tool "*for estimating the dispatch of the power system given a number of simplifying assumptions to approximate how the electricity system might function under given conditions. However, the actual unit-level dispatch of the future electricity market depends on unknowable market factors. Rather than being selected by their relative costs when compared with other available power plants, the market functions to select which power plants to dispatch based on the bids of the different participating generators. The results from the model simulations indicate what plants, from a group of available power plants, could be dispatched under the assumed conditions, not the actual plant or unit level commitments."* (ARB 2017) As a result, unit specific results *"should not be considered accurate forecasts of which plants would actually be called on in the electricity market in future years. They are merely approximations of how units might be operated."* (ARB 2017) Therefore, the emission reductions calculated from the PLEXOS model are predictions based on future optimum grid generation costs. They are not real, quantifiable, permanent, surplus, and enforceable emission reductions or mitigation.

2. "*PLEXOS determines the array of potential generating units capable of meeting the demand given the various constraints on power generation units, transmission capacity limitations, and the need to maintain the grid reliability."* (ARB 2017) In order to be accurate and reliable, the model usually requires the input of dataset from resources in a larger electricity grid, such as the Western Electricity Coordinating Council (WECC) grid. This model is not refined enough to study resources in a relatively small region, such as the South Coast Air Basin as done in the ZGlobal study.

3. The PLEXOS model as described by the ZGlobal study solves for ancillary services (A/S) for each Balancing Authority Area (BAA) in the WECC. The Stanton project is located in the CAISO BAA which has about 43,000 MW of non-qualifying facility (QF) thermal and hydro resources that may be available to count towards A/S within the CAISO. The proposed Stanton would be rated at 98 MW of turbine and battery capacity. Adding this Stanton 98 MW project will no doubt change the dispatch of resources in the CAISO but a production cost model cannot reliably predict that the dispatch change will specifically change the dispatch of resources in the SCAQMD.

Notwithstanding that Stanton does not propose any emission offsets for CEQA mitigation, the SCAQMD would be providing emission offsets via an accounting of its Offset Accounts for Nonattainment Air Contaminants, if the project is approved for a license by the Energy Commission. According to SCAQMD Rule 1315, the SCAQMD is required to track all emission increases that are offset through the Offset Accounts for Federal NSR equivalency, which includes the emission offsets from the Priority Reserve under Rule 1309.1 for certain qualifying facilities, and for facilities such as Stanton that are exempt from offset requirements under SCAQMD Rule 1304. These increases are all debited from SCAQMD's federal offset accounts when they occur at federal major sources. For federal equivalency demonstrations, SCAQMD uses an offset ratio of 1.2-to-1.0 for extreme non-attainment pollutants (ozone and ozone precursors, i.e. VOC and NOx) and uses 1.0-to-1.0 for all other non-attainment pollutants (non-ozone precursors, i.e. SOx, CO, and PM10/2.5) to offset any such increases. Pursuant to SCAQMD Rule 1315, SCAQMD needs to provide information regarding the status of Regulation XIII - NSR in meeting federal NSR requirements, and show that SCAQMD's NSR program is in compliance with an equivalent to applicable federal requirements.

The most recent SCAQMD status report was submitted to U.S. EPA on October 26, 2017(SCAQMD 2017a), which presents the federal Final Determination of equivalency for January 2015 through December 2015, with projections for calendar years 2016 and 2017. Therefore, based on the exemption requirements of SCAQMD Rule 1304 and the offset accounts/tracking requirements under Rule 1315, staff concludes that the use of the SCAQMD offset account for Stanton would fully mitigate the proposed project impacts from NOx, VOC, SOx, PM10 and PM2.5 emissions, and additional CEQA mitigation is not required. Since CO is an attainment pollutant and not a precursor to any nonattainment pollutant, CEQA offset mitigation for CO is also not required.

Staff's evaluation of the adequacy of project mitigation was determined solely based on the merits of this case, including the SCAQMD offset requirements, the project's emission limits, and ambient air quality considerations of the region, and does not in any way provide a precedent or obligation for the acceptance of offset proposals for any other current or future licensing cases.

Staff Proposed Mitigation

District condition A63.2 will limit the annual emission limits for NOx, CO, VOC, PM10, and SOx, based on the total combined emissions from both turbines, to 7848 lb/yr NOx, 9143 lb/yr CO, 3432 lb/yr VOC, 5412 lb/yr PM10, and 595 lb/yr SOx. Annual limits to stay under the Rule 1304(d)(1)(A) offset exemption thresholds are to be bubbled over all equipment that emit the specific air pollutants. Staff has included the same condition in **AQ-A2.** Considering that Stanton is a hybrid electrical generating facility with low emissions via emission controls and has a limited dispatch, staff believes that the project would be fully mitigated as long as all conditions of certification are accepted. Therefore, staff does not propose additional mitigation measures.

Cumulative Impacts and Mitigation

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

Criteria pollutants have impacts that are usually (though not always) cumulative by their nature. Rarely will a project itself cause a violation of a federal or state criteria pollutant standard. However, many new sources contribute to violations of criteria pollutant standards because of elevated background conditions. Air districts attempt to reduce background criteria pollutant levels by adopting attainment plans, which are multi-faceted programmatic approaches to attainment. Attainment plans typically include new source review requirements that provide offsets and use best available control technology, combined with more stringent emissions controls on existing sources.

The discussion of cumulative air quality impacts includes the following three analyses:

- a summary of projections for criteria pollutants by the air district and the air district's programmatic efforts to abate such pollution;
- an analysis of the project's "localized cumulative impacts" direct emissions locally when combined with other local major emission sources; and
- a discussion of greenhouse gas emissions and global climate change impacts (in **Air Quality Appendix Air-1**).

Summary of Projections

The SCAQMD is the agency with principal responsibility for analyzing and addressing cumulative air quality impacts, including the impacts of ambient ozone and particulate matter. The SCAQMD has summarized the cumulative impact of ozone and particulate matter on the air basin from the broad variety of its sources. Analyses of these cumulative impacts, as well as the measures the SCAQMD proposes to reduce impacts to air quality and public health, are summarized in four publicly available documents that the SCAQMD has adopted. These adopted air quality plans are summarized below.

- **Final 2012 Air Quality Management Plan** (adopted 12/07/2012)
  Link: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan
- **Final 2007 Air Quality Management Plan** (adopted 06/01/2007)
  Link: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/2007-air-quality-management-plan
- **Final Socioeconomic Report for the Final 2012 AQMP** (adopted 12/07/2012)
  Link: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/final-socioeconomic-report-2012.pdf

- **State of California's SIP for the new federal PM2.5 and 8-hour ozone standards** (adopted July 21, 2011)
  Link: http://www.arb.ca.gov/planning/sip/2007sip/2007sip.htm

2012 Air Quality Management Plan

The following paragraphs are excerpted from the Executive Summary of the 2012 Air Quality Management Plan adopted by the SCAQMD December 7, 2012:

The SCAQMD adopted (December 7, 2012) the 2012 Air Quality Management Plan (AQMP) primarily in response to changes in the federal Clean Air Act (CAA). The CAA requires a 24-hour PM2.5 nonattainment area to prepare a State Implementation Plan (SIP) which must be submitted to U.S. EPA by December 14, 2012. The SIP must demonstrate attainment with the 24-hour PM2.5 standard by 2014, with the possibility of up to a five-year extension to 2019, if needed. U.S. EPA approval of any extension request is based on the lack of feasible control measures to move forward the attainment date by one year. The District's attainment demonstration shows that, with implementation of all feasible controls, the earliest possible attainment date is 2014, and thus no extension of the attainment date is needed. In addition, the U.S. EPA requires that transportation conformity budgets be established based on the most recent planning assumptions (i.e., within the last five years) and approved motor vehicle emission models. The Final Plan is based on the most recent assumptions provided by both ARB and Southern California Association of Governments (SCAG) for motor vehicle emissions and demographic updates and includes updated transportation conformity budgets.

The Final 2012 AQMP outlines a comprehensive control strategy that meets the requirement for expeditious progress towards attainment with the 24-hour PM2.5 NAAQS in 2014 with all feasible control measures. The Plan also includes specific measures to further implement the ozone strategy in the 2007 AQMP to assist attaining the 8-hour ozone standard by 2023. The control measures contained in the Final 2012 AQMP can be categorized as follows:

> *Basin-wide Short-term PM2.5 Measure. Measures that apply Basin-wide, have been determined to be feasible, will be implemented by the 2014 attainment date, and are required to be implemented under state and federal law. The main short-term measures are episodic, in that they only apply during high PM2.5 days and will only be implemented as needed to achieve the necessary air quality improvements.*
>
> *Contingency Measures. Measures to be automatically implemented if the Basin fails to achieve the 24-hour PM2.5 standard by 2014.*
>
> *8-hour Ozone Measures. Measures that provide for necessary actions to maintain progress towards meeting the 2023 8-hour ozone NAAQS, including regulatory measures, technology assessments, key investments, and incentives.*
>
> *Transportation Control Measures. Measures generally designed to reduce vehicle miles travelled (VMT) as included in SCAG's 2012 Regional Transportation Plan.*

Many of the control measures proposed are not regulatory in form, but instead focus on incentives, outreach, and education to bring about emissions reductions through voluntary participation and behavioral changes needed to complement regulations.

The Basin faces several ozone and PM attainment challenges, as strategies for significant emission reductions become harder to identify and the federal standards continue to become more stringent. California's Greenhouse Gas reductions targets under AB32 add new challenges and timelines that affect many of the same sources that emit criteria pollutants. In finding the most cost-effective and efficient path to meet multiple deadlines for multiple air quality and climate objectives, it is essential that an integrated planning approach is developed. Responsibilities for achieving these goals span all levels of government, and coordinated and consistent planning efforts among multiple government agencies are a key component of an integrated approach.

To this end, and concurrent with the development of the 2012 AQMP, the District, the Air Resources Board, and San Joaquin Valley Air Pollution Control District engaged in a joint effort to take a coordinated and integrated look at strategies needed to meet California's multiple air quality and climate goals, as well as its energy policies. California's success in reducing smog has largely relied on technology and fuel advances, and as health-based air quality standards are tightened, the introduction of cleaner technologies must keep pace. More broadly, a transition to zero- and near-zero emission technologies is necessary to meet 2023 and 2032 air quality standards and 2050 climate goals. Many of the same technologies will address air quality, climate and energy goals. As such, strategies developed for air quality and climate change planning should be coordinated to make the most efficient use of limited resources and the time needed to develop cleaner technologies.

2007 Air Quality Management Plan

The following paragraphs are excerpted from the Executive Summary of the 2007 Air Quality Management Plan adopted by the SCAQMD June 1, 2007:

The SCAQMD adopted (June 1, 2007) the 2007 Air Quality Management Plan (AQMP) primarily in response to changes in the federal Clean Air Act (CAA). The CAA requires an 8-hour ozone nonattainment area to prepare a SIP revision by June 2007 and a PM2.5 nonattainment area to submit by April 2008. The SCAQMD has decided that it is most prudent to prepare a single comprehensive and integrated SIP revision that satisfies both the ozone and PM2.5 requirements. Additionally, the U.S. EPA requires that transportation conformity budgets be established based on the most recent planning assumptions and approved motor vehicle emission model. The AQMP is based on assumptions provided by both the California Air Resources Board (ARB) and the Southern California Association of Governments (SCAG) reflecting their upcoming model (EMFAC) for motor vehicle emissions and demographic updates.

The Final 2007 AQMP relies on a comprehensive and integrated control approach to achieve the PM2.5 standard by 2015 through implementation of short-term and mid-term control measures and achieve the 8-hour ozone standard by 2024 based on implementation of additional long-term measures. In order to demonstrate attainment by the prescribed deadlines, emission reductions needed for attainment must be in place by 2014 and 2023 timeframe.

The AQMP control measures consist of four components: 1) the District's Stationary and Mobile Source Control Measures; 2) ARB's Proposed State Strategy; 3) District Staff's Proposed Policy Options to Supplement ARB's Control Strategy; and 4) Regional Transportation Strategy and Control Measures provided by SCAG.

In order to achieve necessary reductions for meeting air quality standards, all four agencies (i.e., SCAQMD, ARB, U.S. EPA, and SCAG) would have to aggressively develop and implement control strategies through their respective plans, regulations, and alternative approaches for pollution sources within their primary jurisdiction. Even though SCAG does not have direct authority over mobile source emissions, it will commit to the emission reductions associated with implementation of the 2004 Regional Transportation Plan and 2006 Regional Transportation Improvement Program which are imbedded in the emission projections. Similarly, the Ports of Los Angeles and Long Beach have authority they must utilize to assist in the implementation of various strategies if the region is to attain clean air by federal deadlines.

Although the SCAQMD has completely met its obligations under the 2003 AQMP and stationary sources subject to the District's jurisdiction account for only 12% of NOx and 37% of SOx emissions in the Basin in 2014, the Final 2007 AQMP contains several short-term and mid-term control measures aimed at achieving further NOx and SOx reductions (as well as VOC and PM2.5 reductions) from these already regulated sources. These strategies are based on facility modernization, energy conservation measures and more stringent requirements for existing equipment (e.g., space heaters, ovens, dryers, furnaces).

Clean air for this region requires ARB to aggressively pursue reductions and strategies for on-road and off-road mobile sources and consumer products. In addition, considering the significant contribution of federal sources such as marine vessels, locomotives, and aircraft in the Basin (i.e., 56% of SOx in 2014 and 37% of NOx in 2023), it is imperative that the U.S. EPA pursue and develop regulations for new and existing federal sources to ensure that these sources contribute their fair share of reductions toward attainment of the federal standards. Unfortunately, regulation of these emission sources has not kept pace with other source categories and as a result, these sources are projected to represent a significant and growing portion of emissions in the Basin. Without a collaborative and serious effort among all agencies, attainment of the federal standards would be seriously jeopardized.

Final Socioeconomic Report for the Final 2012 AQMP

The following are excerpted from the Final Socioeconomic Report for the Final 2012 AQMP adopted by the SCAQMD December 7, 2012:

The 2012 AQMP has been prepared to meet the challenge of achieving healthful air quality in the South Coast Air Basin (Basin) and the Coachella Valley. This report accompanies the 2012 AQMP and presents the potential socioeconomic impacts resulting from implementation of this Plan. The information contained herein is considered by the South Coast Air Quality Management District (District) Governing Board when taking action on the Plan.

The 2012 AQMP control strategy is comprised of a traditional command-and-control approach, voluntary/incentive programs, and advanced technologies. Short- and near-term control strategies are proposed and will be implemented by the District, local and regional governments (e.g., transportation control measures provided in the 2012 Regional Transportation Plan), and the California Air Resources Board (ARB). These strategies include basin-wide short-term PM2.5 measures, episodic control measures for high PM2.5 days, measures to partially implement the Section 182I(5) commitment in the 2007 ozone SIP toward meeting the 8-hour ozone standard by 2024, and transportation control measures (TCM) adopted by the Southern California Association of Governments (SCAG). Many of the measures require behavioral changes and voluntary participation through outreach, incentive, and education. Implementation of these control strategies has potential effects on the region's economy.

The District relies on a number of methods, tools, and data sources to assess the impact of proposed control strategies on the economy. The involved applications include: integration of air quality data and concentration-response relationships to estimate benefits of clean air; capital, operating and maintenance expenditures on control devices and emission reductions to assess the cost of the Plan; and REMI (Regional Economic Models, Inc.) model to assess potential employment and other socioeconomic impacts (e.g., population and competitiveness).

Over the years, there has been an overall trend of steady improvement in air quality in the Basin. Additional emission reductions are still needed in order to bring the Basin into compliance with the federal 24-hour PM2.5 standard. Complying with the air quality standard would allow the District to avoid potential sanctions that could increase offset ratios for major sources and result in suspension of highway transportation funding. The benefits of better air quality through implementation of the 2012 AQMP include reductions in morbidity and mortality, visibility improvements, reduced expenditures on refurbishing building surfaces, and reduced traffic congestion.

The Draft 2012 Plan is projected to comply with the federal PM2.5 standard with an average annual benefit of $10.7 billion between 2014 and 2035. The $10.7 billion includes approximately $7.7 billion for congestion relief for all TCMs in the 2012 RTP, $2.2 billion for averted illness and higher survival rates, $696 million for visibility improvements, and $14 million for reduced damage to materials.

The analysis contained herein estimates that the benefits for the Plan significantly outweigh the anticipated costs. The measurement of clean air benefits is performed indirectly since clean air is not a commodity purchased or sold in a market. This often results in incomplete and underestimated benefits. The benefits of clean air (based on the total emission reductions required for attainment) for which a monetary figure can be applied are estimated to be $10.7 billion (including congestion relief benefits for all the TCMs) as compared to the estimated costs of $448 million on an average annual basis. There are, however, many benefits which are still unaccounted for, such as reductions in chronic illness and lung function impairment in human beings, reduced damage to livestock and plant life, erosion of building materials, and the value of reduced vehicle hours traveled for personal trips.

The Plan is designed to bring northwest Riverside (the Mira Loma area), the only area in exceedance of the federal PM2.5 standard, into attainment. However, PM2.5 air quality benefits occur throughout the Basin. The San Fernando Valley, southern Los Angeles County, and the northwest Riverside County would experience the highest shares of air quality benefits. The western portions of Los Angeles and Orange Counties and the eastern and northern portions of San Bernardino County are projected to have the highest shares of health benefits.

Implementation of PM2.5 and ozone measures would impose costs on various communities. The sub-regions with the highest costs are the central, southeast, and San Fernando areas of Los Angeles County. These three areas are projected to have the highest cost shares from SCAG TCMs and relative higher cost shares from ozone measures.

All sub-regions are projected to have additional jobs created from cleaner air. The eastern, southern, and San Fernando sub-regions in Los Angeles County and Riverside County are projected to have more jobs created than other sub-regions resulting from clean air benefits. Implementation of quantified control measures would result in jobs forgone between 2013 and 2035. Orange County is projected to have the highest share of jobs forgone from implementation of control measures. This is because the majority of SCAG transportation control measures (TCM) in Orange County would be financed by development fees, which would have a heavy burden on one single sector of the economy—the construction sector. For the entire Plan, all sub-regions would show positive job impacts as the four-county area becomes more competitive and attractive with the progress in clean air.

Job gains from cleaner air would benefit all wage groups. Conversely, all five groups would experience jobs forgone from control measures. However, there is no significant difference in impacts expected for high- versus low-paying jobs. The same is observed for impacts on the price of consumption goods from one income group to another. These findings will be further evaluated during individual rule development.

State of California SIP for the new federal PM2.5 and 8-hour Ozone Standards (adopted July 21, 2011)

On April 28, 2011, the ARB considered revisions to the South Coast (and San Joaquin Valley) State Implementation Plans (SIPs) for PM2.5 that accounted for reductions of emissions that contribute to PM2.5 levels. The revisions were formally adopted by the ARB's Executive Officer on May 18, 2011, when Executive Order S-11- 010 was signed. The April 2011 PM2.5 SIP Revisions accounted for recent regulatory actions and recessionary impacts on emissions that occurred after the South Coast (and San Joaquin Valley) PM2.5 SIPs were adopted in 2007 and 2008. Those revisions accounted for the impact the recession has had on emissions and the benefits of ARB's in-use diesel truck and off-road equipment regulations. The revisions updated the PM2.5 SIP's reasonable further progress calculations, transportation conformity budgets, and ARB's rulemaking calendar.

SCAQMD NOx RECLAIM Program Transition

SCAQMD adopted the 2016 Air Quality Management Plan (AQMP) on March 3, 2017. The plan includes the modification of Control Measure CMB-05 to achieve the five tons per day NOx emission reduction as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command and control regulatory structure requiring best available retrofit control technology (BARCT) level controls as soon as practicable. Power plants plan will be converted by November 2018. Currently, Stanton will not be required to participate in RECLAIM.

Localized Cumulative Impacts

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

Projects with stationary sources located up to six miles from the proposed project site usually need to be considered in the cumulative analysis.

On April 25, 2017 the applicant submitted the request to SCAQMD for a list of projects that are within six miles of the project site, that are either currently in the permitting process, undergoing CEQA review, or recently received a Permit to Construct (PTC). The SCAQMD provided a list on October 18, 2017. The list was updated by the applicant by removing 1) sources of pollutants with emissions less than 5 tons per year, 2) sources with only VOC emissions, and 3) sources where the permitting action was only associated with Title V Operating Permit renewals. The resulting source inventory and emission data are shown in **Air Quality Table 17**. Staff agrees to the use of the list of sources for the cumulative impact analysis.

Air Quality Table 17
Stanton Cumulative Inventory Sources and Emissions

SCAQMD ID#	Facility Name	CO	NOx	SO2	PM10/PM2.5
132343	SPECTRUM PAINT & POWDER, INC.	5.00	11.00	0.00	3.00
121872	DAE SHIN USA INC /JAE WEON LEE	28.00	17.00	0.00	12.00
156564	INTERNATIONAL PAPER - BUENA PARK	0.00	0.00	0.00	5.00
3254	AMERIPEC INC	83.00	13.00	0.00	6.00
143588	NEW CINGULAR WIRELESS PCS, AT&T	4.00	9.00	0.00	0.00
173931	DAMAC PRODUCTS, LLC	3.00	4.00	0.00	7.00
24711	ANAHEIM CITY, CONVENTION CTR	22.00	25.00	0.00	3.00
51475	SO CAL EDISON CO, Barre peaking plant	5.15	3.99	0.21	3.52
35103	UCI MEDICAL CENTER	90.02	37.92	1.00	16.09
16399	LA CO., SANITATION DIST NO. 2	17.00	10.00	0.00	2.00
140961	GKN AEROSPACE TRANSPARENCY SYS	21.00	10.00	0.00	4.00
125074	US FOODSERVICE	1.00	7.00	0.00	0.00
98715	TECHNO COATINGS INC	0.00	0.00	0.00	12.00
15216	CAL AURUM IND	0.00	0.00	0.00	13.00
96552	PRIMA-TEX INDUSTRIES INC	2.00	9.00	0.00	2.00
16660	THE BOEING COMPANY	47.00	33.00	0.00	10.40

Source: SERC 2018b

The SCAQMD was unable to provide stack parameters for the sources listed in **Air Quality Table 17**, with the exception of the Barre peaking plant. Facility emissions for sources without known stack parameters were modeled with an assumed stack height of 10 meters, a stack diameter of 0.1 meters, a stack exit velocity of 1 m/s, and a stack exit temperature set to the ambient air temperature used in the hourly meteorological data set.

Since the submission of the Stanton AFC, the SCAQMD has updated the meteorological data sets for use in permiting projects to incoporate the new EPA regulatory default use of u-star (U*) during the processing of the data with AERMET, version 16216. U* is now a regulatory option in the AERMOD modeling system that adjusts the surface friction velocity parameter in the surface file (*.sfc) to improve model performance for sources that have peak concentrations under low wind, stable atmospheric conditions. The U* option is only applied to ASOS data or site-specific meteorological stations that do not include turbulence data. All of the stations that SCAQMD has processed meet these requirements, as turbulence data is not collected at SCAQMD monitoring stations. The data sets from Anaheim station used for the modeling in the AFC are no longer available due to the lack of a colocated ASOS station. Based on the updated SCAQMD data sets and the inclusion of the EPA regulatory default use of U*, the cumulative modeling analyses were performed utilizing the closest and most representative meteorological data set from Fullerton Airport site, located approximately 7.2 kilometers northeast of the project site.

The latest version of AERMOD (version 16216r) was used in the cumulative modeling assessment. The same worst-case Stanton operating conditions from the previous project-only modeling (**Air Quality Table 12**) were used. Based on recently revised SCAQMD modeling guidance, impacts assumed in the analyses included 100% conversion of NOx emissions to NO_2 (since SCAQMD no longer accepts the traditional Ambient Ratio Method (ARM) for use in NO_2 conversion).

Air Quality Table 18 compares the project-only impacts from the Anaheim and Fullerton Airport meteorological data. As shown in **Air Quality Table 18,** the impacts modeled by utilizing meterological data from both stations are almost identical with the except of 1-hour NO_2 and CO. The differences of 1-hour NO_2, federal 1-hour $NO_2$and CO are 1.5 µg/m^3, 0.8 µg/m^3 and 3.6 µg/m^3 respectively. The corresponding changes of the project impacts due to the change of meteorological data are 1%, 0.7% and 0.1% respectively. Therefore, the change of meteorological data does not affect the project impact analysis. Staff has no objection to using meteorological data from the Fullerton Airport for cumulative impact analysis.

Air Quality Table 18
Stanton, Project-Only Maximum Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact (Anaheim)	Modeled Impact (Fullerton)	Background	Limiting Standard
PM10	24 hour	0.5	0.48	**85**	**50**
	Annual	0.02	0.02	**26.8**	**20**
PM2.5	24 hour	0.5	0.43	34.4	35
	Annual	0.02	0.02	10.5	12
CO	1 hour	9.3	5.7	3,565	23,000
	8 hour	2.2	2.3	2,444	10,000
NO_2 [a]	State 1 hour	6.2	4.7	141	339
	Federal 1 hour[b]	3.3	4.1	112.8	188
	Annual	0.02	0.02	28.2	57
SO_2	State 1 hour	0.4	0.3	23.0	655
	Federal 1 hour	0.4	0.3	10.5	196
	24 hour	0.07	0.08	3.7	105

Source: SERC 2016a, SERC 2018b, SERC 2018c, SCAQMD 2018g with independent staff analysis.
Note:
[a] The maximum 1-hour and annual NO_2 concentrations based on Anaheim data include ambient NO_2 ratios of 0.80 and 0.75 respectively, while the results based on Fullerton data include 100% conversion of NOx to NO_2.
[b] The concentration for the federal 1-hour NO_2 standard is the 5- year average of maximum 1-hour modeled concentration.

The cumulative air quality impacts analysis results are included in **Air Quality Table 19**. The modeled impacts are combined with background concentrations to determine the total predicted impacts. As shown in **Air Quality Table 19**, the impacts from CO and SO_2 emissions in the cumulative analysis are not expected to cause or contribute to a violation of any AAQS and are therefore considered to be less than significant.

The NO_2, PM10 and PM2.5 emissions from the modeled cumulative sources will cause or contribute to the violation of the most stringent AAQS. Therefore, a culpability analysis was performed by the applicant for those receptors with modeled exceedances to determine the maximum Stanton-only impacts at those locations. The modeled results are shown in **Air Quality Table 20.** As shown in **Air Quality Table 20**, the maximum pollutant concentrations due to the Stanton emissions at the receptors with modeled exceedances are negligible compared to those from the total cumulative sources. Therefore, the modeled exceedances are either due to the high background

concentrations or other cumulative inventory sources. Stanton would not be expected to cause or significantly contribute to any of those modeled exceedances.

Air Quality Table 19
Stanton, Maximum Cumulative Impacts (µg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total	Limiting Standard	Percent of Standard
PM10	24 hour	45.9	**85**	**130.9**	**50**	**262**
	Annual	**24.7**	**26.8**	**51.5**	**20**	**258**
PM2.5	24 hour [a]	33.8	34.4	**68.2**	**35**	**195**
	Annual	**24.7**	10.5	**35.2**	**12**	**293**
CO	1 hour	735.4	3,565	4300.4	23,000	19
	8 hour	408.0	2,444	2852	10,000	29
NO_2 [b]	State 1 hour	**309.8**	**141**	**450.8**	**339**	**133**
	Federal 1 hour [c]	**170.4**	**112.8**	**283.2**	**188**	**151**
	Annual	**58.1**	**28.2**	**86.3**	**57**	**151**
SO_2	State 1 hour	8.2	23.0	31.2	655	5
	Federal 1 hour [d]	8.2	10.5	18.7	196	10
	24 hour	2.9	3.7	6.6	105	6

Source: SERC 2018b with independent staff analysis.
Note:
[a] Total predicted concentration for the federal 24-hour PM2.5 standard is the 5- year average of 98th percentile 24-hour modeled concentration combined with the 3-year average of 98th percentile background concentrations.
[b] The maximum 1-hour and annual NO_2 concentrations include 100 percent conversion of NOx emissions to NO_2.
[c] Total predicted concentration for the federal 1-hour NO_2 standard is the 5- year average of 98th percentile 1-hour modeled concentration combined with the 3-year average of 98th percentile background concentrations.
[d] Total predicted concentration for the federal 1-hour SO_2 standard is the maximum modeled concentration combined with the 3-year average of 99th percentile background concentrations.

Based on the above results, staff concludes that operations of Stanton, when combined with operation from other existing and proposed cumulative sources, will not cause significant cumulative impacts.

Air Quality Table 20
Stanton, Impacts at Receptors with Modeled Exceedances (µg/m^3)

Pollutant	Averaging Time	Molded Project - Only Impacts	Modeled Cumulative Impacts
PM10	24 hour	0.48	45.9
	Annual	0.02	24.7
PM2.5	24 hour	0.054	33.8
	Annual	0.02	24.7
CO	1 hour	--	735.4
	8 hour	--	408.0
NO_2	State 1 hour	0.059	309.8
	Federal 1 hour	0.225	170.4
	Annual	0.002	58.1
SO_2	State 1 hour	--	8.2
	Federal 1 hour [d]	--	8.2
	24 hour	--	2.9

Source: SERC 2018b.

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. **Environmental Justice Figure 1** shows the presence of an EJ population based on race and ethnicity within the six-mile radius of the project site. **Environmental Justice Figure 2** and **Table 3** show the presence of an EJ population based on low income.

In carrying out this analysis, staff evaluated whether Stanton 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 Stanton 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 (such as an EJ population). 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 preceding subsections found the proposed project would not cause impacts to air quality and would be mitigated to less than significant. With respect to ozone (ozone precursors- NOx and VOC) and PM2.5, impacts would be less than significant. Staff also concludes that air quality impacts related to vehicle emissions would be less than significant. Likewise, the project would not cause disproportionate air quality impacts on sensitive populations, such as the EJ population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3**.

This subsection discusses impacts on the EJ population and considers the additional information that CalEnviroScreen data can provide, noting the disadvantaged community census tracts within the project area.

DISADVANTAGED COMMUNITIES

CalEnviroScreen indicators are used to measure factors that affect the potential[1] for pollution impacts in communities. Staff used CalEnviroScreen 3.0 to identify disadvantaged communities[2] in the vicinity of the proposed project (see **Environmental Justice Figure 1**). Because a CalEnviroScreen score evaluates multiple pollutants and factors collectively, staff examined individual contributions of indicators that are relevant to air quality (see **Environmental Justice Table 1**). Values 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.[3]

[1] It is important to note that CalEnviroScreen is not an expression of health risk and does not provide quantitative information on increases of impacts for specific sites or project. CalEnviroScreen uses the criteria of "proximity" to a hazardous waste site, a leaking underground tank, contaminated soil, an emission stack (industry, power plant, etc.) to determine that a population is "impacted". It does not address general principles of toxicology: dose/response and exposure pathways. For certain toxic chemicals to pose a risk to the public, offsite migration pathways must exist (through ingestion, inhalation, dermal contact, etc.) and contact to a certain amount – not just any amount – must exist.

[2] 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 or above the 75th percentile. As a comparative screening tool, it is not intended to be used as a health or ecological risk assessment for a specific area or site.

[3] Each census tract was assigned a score based on the relative concentrations of different contaminants and whether multiple contaminants are present. A census tract with a drinking water contaminant score in the 75 percentile indicates that its burden is higher than 75 percent of all California census tracks.

Air Quality Table 21
CalEnviroScreen 3.0 Indicator Percentile Scores

Census Tract[1]	Overall Percentile Range[2]	Ozone Concentration[3] (µg/m^3)	Ozone Percentile[4]	PM2.5 Concentration[5] (µg/m^3)	PM2.5 Percentile[4]	Traffic Density	Traffic Density Percentile
6059011601	91-95%	0.046	53.02	11.21	66.23	3431.09	**98.55**
6059011602	86-90%	0.046	53.02	11.21	66.23	3338.69	**98.31**
6059086602	76-80%	0.046	53.02	11.21	66.23	1349.33	79.48
6059086601	86-90%	0.046	53.02	11.21	66.23	3875.89	**99.29**
6059086501	81-85%	0.046	53.02	11.21	66.23	3334.08	**98.30**
6059086702	86-90%	0.046	53.02	11.21	66.23	3663.63	**98.96**
6059087405	91-95%	0.046	53.02	11.21	66.23	2542.59	**95.25**
6059087403	86-90%	0.046	53.02	11.21	66.23	3072.58	**97.63**
6059110603	81-85%	0.046	53.02	11.21	66.23	1803.54	88.41
6059087102	81-85%	0.046	53.02	11.21	66.23	3148.8	**97.77**
6059087504	76-80%	0.046	53.02	11.21	66.23	3661.68	**98.93**
6059099601	81-85%	0.044	40.49	11.21	66.23	2554.83	**95.38**
6059087404	81-85%	0.046	53.02	11.21	66.23	703.66	50.37
6059086404	81-85%	0.046	53.02	11.21	66.23	3456.4	**98.57**
6059087401	76-80%	0.046	53.02	11.21	66.23	2775.93	**96.40**
6059087805	81-85%	0.046	53.02	11.21	66.23	1024.08	68.83
6059099802	76-80%	0.044	40.49	11.21	66.23	1041.88	69.52
6059001801	81-85%	0.046	53.02	11.21	66.23	1794.15	88.33
6059089106	81-85%	0.046	53.02	11.21	66.23	2259.11	**93.18**
6059086802	91-95%	0.046	53.02	11.21	66.23	2664.57	**95.96**
6059088802	76-80%	0.046	53.02	11.21	66.23	2175.7	**92.56**
6059089004	86-90%	0.046	53.02	11.21	66.23	875.26	61.42
6059088501	76-80%	0.046	53.02	11.21	66.23	1860.53	89.21
6059087803	86-90%	0.046	53.02	11.21	66.23	1251.53	76.78
6059099904	76-80%	0.044	40.49	11.21	66.23	1518.52	83.28
6059088101	81-85%	0.044	40.49	11.21	66.23	998.18	67.58
6059110606	86-90%	0.046	53.02	11.21	66.23	1229.01	76.15
6059001802	76-80%	0.046	53.02	11.21	66.23	2217.78	**92.88**
6059089001	81-85%	0.046	53.02	11.21	66.23	1129.6	72.87
6059089003	91-95%	0.046	53.02	11.21	66.23	1965.15	**90.61**
6059086502	91-95%	0.046	53.02	11.21	66.23	3683.34	**99.01**
6059086701	76-80%	0.046	53.02	11.21	66.23	3796.1	**99.21**
6059087901	76-80%	0.046	53.02	11.21	66.23	1165.22	74.12
6059110302	76-80%	0.046	53.02	11.21	66.23	3047.42	**97.56**
6059087806	76-80%	0.046	53.02	11.21	66.23	973.53	66.37
6059110500	91-95%	0.046	53.02	11.21	66.23	1523.49	83.42
6037555102	81-85%	0.044	40.49	11.21	66.23	501.32	30.91
6037555211	81-85%	0.044	40.49	11.21	66.23	1547.07	83.92
6037503902	76-80%	0.046	53.02	11.21	66.23	1289.34	77.93

(**Source**: CalEnviroScreen 3.0 Data, www1.oehha.ca.gov/calenviroscreen/maps-data/download-data)

Notes:

1. Census tract locations are shown in **Environmental Justice Figure 1**.
2. Overall Score Range incorporates all indicators shown in **Environmental Justice Table 1**.
3. Ozone concentrations are below the 8-hour ambient air quality standard of 0.070 ppm.
4. Census tracts were ordered by concentration values and assigned a percentile based on the statewide distribution of values. Only concentrations over the federal standard from 2012-2014 were used by CalEnviroScreen to determine a percentile.
5. PM2.5 concentrations are all below the Annual Mean ambient air quality standard of 12 µg/m^3.

The indicator scores presented in **Air Quality Table 21** are somewhat similar among census tracts.

Ozone Impacts

Ozone is known to cause numerous health effects which can potentially affect EJ communities due to:

- lung irritation, inflammation and exacerbation of existing chronic conditions, which can be seen at even low exposures (Alexis *et al.* 2010, Fann *et al.* 2012, Zanobetti and Schwartz 2011).;
- an increased risk of asthma, which according to studies is higher among children under 2 years of age, young males, and African American children that have been exposed to ambient ozone concentrations (Lin *et al*., 2008, Burnett *et al*., 2001); and,
- higher mortality, particularly in the elderly, women and African Americans from increases in ambient ozone (Medina-Ramon, 2008).

Ambient air quality standards (AAQS) define clean air, and are established to protect the health of the most sensitive individuals in our communities, such as an EJ population. An air quality standard defines the maximum amount of a pollutant that can be present in outdoor air without harm to the public's health. Both the Air Resources Board (ARB) and the U.S. Environmental Protection Agency (U.S. EPA) are authorized to set ambient air quality standards. **Air Quality Table 21** identifies the disadvantaged community census tracts near the proposed project site. Even though ozone is not directly emitted from fossil fuel emission sources such as Stanton, the precursor pollutants that create ozone such as nitrogen oxides (NOx) and volatile organic compounds (VOCs) are expected to be emitted, but at less than significant levels.

For CalEnviroScreen, the indicator ozone is determined by the amount of daily maximum 8-hour ozone concentration over the California 8-hour standard (0.070 parts per million (ppm)), averaged over three years (2012-2014). According to CalEnviroScreen data, ozone concentrations in the census tracts in **Air Quality Table 21** were all below the 8-hour ozone health based standard of 0.070 ppm. As the proposed project would not significantly individually or cumulatively contribute to air quality impacts from NOx and VOCs, the project would have a negligible contribution to ozone levels in the disadvantaged communities identified in **Air Quality Table 21**.

PM2.5 Impacts

Particulate matter (PM) is a complex mixture of aerosolized solid and liquid particles including such substances as organic chemicals, dust, allergens and metals. These particles can come from many sources, including cars and trucks, industrial processes, wood burning, or other activities involving combustion. The composition of PM depends on the local and regional sources, time of year, location and weather.

PM2.5 refers to particles that have a diameter of 2.5 micrometers or less. Particles in this size range can have adverse effects on the heart and lungs, including lung irritation, exacerbation of existing respiratory disease, and cardiovascular effects.

PM2.5 is known to cause numerous health effects which can potentially affect EJ communities. For CalEnviroScreen, the indicator PM2.5 is determined by the annual mean concentration of PM2.5 (average of quarterly means), averaged over three years (2012-2014). According to CalEnviroScreen data from 2012-2014, PM2.5 concentrations in the disadvantaged community census tracts in **Air Quality Table 21** were all below the annual mean PM2.5 health based ambient air quality standard of 12 $\mu g/m^3$. As the proposed project would not significantly individually or cumulatively contribute to air quality impacts from PM2.5, the project would have a negligible contribution to PM2.5 levels in the disadvantaged community census tracts identified in **Air Quality Table 21**.

Traffic Density Impacts

Traffic is a significant source of air pollution, particularly in urban areas. Vehicle emissions contain a number of pollutants including NOx, CO, SOx and PM. These pollutants are measured and monitored by nearby air pollution monitoring stations. The pollutants that are specifically addressed in the preceding subsections are those pollutants for which there are specific air quality standards. During construction, workforce traffic and project supply delivery traffic would be added to the area roadways. As there is no operations staff for the project, no traffic would be permanently added to the area roadways by this project.

For CalEnviroScreen, traffic density is an indicator 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.

Traffic density would influence the background level of traffic-related pollutants in a specified area. In order to demonstrate compliance with ambient air quality standards, the modeled impacts from the project were added to highest local background ambient air concentrations from the last three years, which include emissions from mobile sources. Staff concluded that as proposed, the project's construction traffic would have a negligible contribution of vehicle emissions, compared with the normal background levels.

The proposed project would not significantly individually or cumulatively contribute to air quality impacts related to vehicle emissions in the disadvantaged community census tracts identified in **Air Quality Table 21**.

Environmental Justice Conclusion

Provided all staff-recommended conditions of certification are implemented, the project would have a less than significant impact on the most sensitive population, including the EJ population.

CalEnviroScreen 3.0 includes only two criteria pollutants: ozone and PM2.5. Air Quality impacts for all criteria pollutants including ozone and PM2.5 to the EJ population would be considered less than significant with the adopted conditions of certification. Also, air quality impacts for other pollutants emitted from the project on the EJ population would be less than significant with the adopted conditions of certification.

CalEnviroScreen 3.0 also includes a traffic parameter - traffic density. Air Quality impacts related to traffic emissions would also be considered less than significant with the adopted conditions of certification.

COMPLIANCE WITH LORS

The Final Determination of Compliance (FDOC) for Stanton was docketed on May 2, 2018. Compliance with all SCAQMD rules and regulations was demonstrated to the SCAQMD's satisfaction in the FDOC, and the FDOC conditions are included in the staff-proposed conditions of certification below.

FEDERAL

Title 40 Code of Federal Regulations Subchapter C –Air Programs

40 CFR Part 50 – National Primary and Secondary Ambient Air Quality Standards

40 Code of Federal Regulations (CFR) Part 50 National Primary and Secondary Ambient Air Quality Standards codifies the NAAQS. The project owner conducted dispersion modeling to determine if the proposed project would exceed any AAQS. The modeling analysis demonstrated Stanton would not cause a violation for any of the criteria attainment pollutants during normal operations (including startup and shutdown periods). Nonattainment pollutant emissions would be mitigated consistent with SCAQMD's SIP approved NSR program.

40 CFR Part 51– Requirements for Preparation, Adoption, and Submittal of Implementation Plans

40 CFR Part 51 Requirements for Preparation Adoption and Submittal of Implementation Plans requires NSR permitting for new stationary sources. NSR applies to sources of designated nonattainment pollutants. The NSR permitting is addressed through SCAQMD Regulation XIII. A Permit to Construct and Permit to Operate would be obtained by the project owner satisfying the requirements.

40 CFR Part 52 – Approval and Promulgation of Implementation Plans

40 CFR Part establishes procedures for allowing new sources of air pollution to be constructed or existing sources to be to be modified in areas classified as attainment. Prevention of Significant Deterioration (PSD) requirements apply on a pollutant specific basis for major stationary sources. Stanton is not subject to PSD review for NOx, PM_{10}, SOx, and CO because the potentials to emit for these attainment pollutants do not exceed the applicability thresholds of 250 tpy. Therefore, Stanton is not subject to PSD requirements for GHG either, regardless of the GHG potential emissions.

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

40 CFR Part 60 Subpart A – General Provisions

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

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

This subpart establishes NOx and SO_2 emission limits for new combustion turbines. New combustion turbines with a rated heat input greater than 50 MMBtu/hr and less than or equal to 850 MMBtu/hr are required to meet NOx emission limits of 25 ppm at 15 percent oxygen. The fuel sulfur would be limited to 0.060 lbs SO_2 per MMBtu. Combustion turbines regulated under Subpart KKKK are exempt from Subpart GG.

The proposed Stanton turbines would meet the Subpart KKKK requirements with the use of dry-low NOx and SCR systems limiting NOx emissions to 2.5 ppm. Stanton would be limited to pipeline quality natural gas as fuel to meet SO_2 emission requirements. Stanton turbines would monitor NOx emissions with a CEMS. The conditions of certification would contain appropriate measures.

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

On August 3, 2015, the U.S. EPA promulgated 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) (Subpart TTTT). The notice was published in the Federal Register on October 23, 2015 and had an immediate effective date. Subpart TTTT-Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units sets standards to limit emissions of CO_2 from new, modified and reconstructed power plants. Subpart TTTT- requirements 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. Stanton turbines are subject to Subpart TTTT requirements.

Subpart TTTT has different requirements based on whether the emission unit is considered base load. According to Subpart TTTT, base load rating is defined as maximum amount of heat input that an electrical generating unit (EGU) can combust on a steady state basis at ISO conditions. Each EGU is subject to the standard if it burns more than 90% natural gas on a 12-month rolling basis and if the EGU supplies more than the design efficiency times the potential electric output as net-electric sales on a 3 year rolling average basis. An affected EGU supplying equal to or less than the design efficiency times the potential electric output as net electric sales on a 3 year rolling average basis is considered a non-base load unit and is subject to a heat input limit of 120 lbs CO_2/MMBtu. Each affected 'base load' EGU is subject to the gross energy output standard of 1,000 lbs of CO_2/MWh unless the Administrator approves the EGU being subject to a net energy output standard of 1,030 lbs CO_2/MWh.

Stanton turbines must comply with Subpart TTTT emission limit of 50 kg CO_2 per Gigajoule (GJ) of heat input (120 lb CO_2/MMBtu). Compliance with this standard can be demonstrated by the exclusive use of natural gas as fuel.

Condition of Certification **AQ-E4** (E193.4) requires the 120 pounds per MMBtu CO_2 emission limit for non-base load turbines shall apply. Compliance with the 120 pounds per MMBtu CO_2 emission limit is determined on a 12-operating month rolling average basis.

40 CFR 63, National Emission Standards for Hazardous Air Pollutants (NESHAPs).

The NESHAP regulations establish emission standards to limit emissions of Hazardous Air Pollutants (HAPs) from specific source categories. The FDOC demonstrates that with the installation of the proposed new units, the facility total HAP emissions would be below the 25 tons per year total or 10 tons per HAP major source threshold. Therefore, the facility would not be subject to the requirements of this subpart. In addition, the facility is not proposing to permit any diesel fired emergency equipment and therefore would not be subject to Subpart ZZZZ requirements.

40 CFR Part 64 – Compliance Assurance Monitoring (CAM)

The CAM rule establishes monitoring requirements for emission control systems. The CAM rule applies to emission units with uncontrolled potential to emit levels greater than applicable major source thresholds. The rule is intended to provide “reasonable assurance” that the control systems are operating properly to maintain compliance with the emission limits. Stanton will not be a major source. Therefore, CAM is not applicable.

40 CFR 72 – Acid Rain Program

The acid rain program establishes emission standards for SO_2 and NOx through the use of market incentives, monitoring and reporting requirements, and can require SO_2 allowances to be acquired in order to offset the annual SO_2 emissions.

Because Stanton turbines are fired on natural gas only, a SOx CEMS will not be required. Stanton will measure and record SO_2 emissions by using the applicable procedures specified in appendix D to Part 75 for estimating hourly SO_2 mass emissions, pursuant to §75.11(d)(2). Stanton will use the NOx CEMS which complies with the applicable requirements of §75.10 for general operating requirements.

STATE

The project owner 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. Conditions required in the SCAQMD’s FDOC and the Energy Commission’s affirmative finding for the project would ensure compliance.

LOCAL

The project owner provided an air quality permit application to the SCAQMD and the district has issued a FDOC which states that the proposed facility modifications are 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 proposed Stanton. BACT would be implemented, and NOx, VOC, PM10, and SOx emissions from the proposed new gas turbines are exempt from the offset requirements according to district rules and regulations based on the permitted emission levels for the facility modifications. Compliance with the district's new source requirements would ensure that Stanton would be consistent with the strategies and future emissions anticipated under the district's air quality attainment and maintenance plans.

The SCAQMD prepared a FDOC, published on May 2, 2018. The FDOC evaluates compliance with the District's applicable rules and regulations, as summarized below. The final staff analysis (FSA) includes information from the FDOC.

Regulation II – Permits

Rule 202 – Temporary Permit to Operate

A person shall notify the Executive Officer before operating or using equipment granted a permit to construct. Upon such notification, the permit to construct shall serve as a temporary permit for operation of the equipment until the permit to operate is granted or denied. The equipment shall not be operated contrary to the conditions specified in the permit to construct.

Rule 205 – Expiration of Permit to Construct

This rule establishes that a SCAQMD permit to construct expires one year from the date of issuance unless a time extension has been approved in writing by the SCAQMD Executive Officer.

Rules 202 and 205 requirements are set forth in condition 1.b in FDOC *Section E: Administrative Conditions* of the facility permit. Section E is comprised of a standard list of operating conditions that apply to all permitted equipment at the facility unless superseded by condition(s) listed elsewhere in the permit. For clarity and completeness, condition E193.2 reiterates condition 1.b in *Section E*. Condition of Certification **AQ-E2** (E193.2) includes these requirements.

Rule 212 – Standards for Approving Permits

The facility modifications are subject to Rule 212(c)(1), 212(c)(2) and Rule 212(c)(3) public notice requirements.

Rule 212(c)(1) requires public notice for any new or modified equipment that may emit air contaminants located within 1000 feet from the outer boundary of a school. The nearest K-12 school, Robert M. Pyles Elementary School is located 1280 feet away from the closest proposed project stack location.

Rule 212(c)(2) public notice is required for any new or modified facility which has onsite emission increases exceeding specified daily maximums. **Air Quality Table 22** includes the daily facility emissions and Rule 212(c)(2) thresholds.

Rule 212(c)(3) requires public notice for new or modified equipment with emission increases of toxic contaminants that expose a person to a maximum individual cancer risk greater or equal to one in a million during a lifetime (70 years). Public notice will not be required since the maximum individual cancer risk from the stationary equipment would not expose a person to a maximum individual cancer risk greater than or equal to one in a million. Further analysis is included in the Rule 1401 analysis and in the Public Health Section of this document.

Air Quality Table 22
Rule 212(c)(2) Applicability

	Emissions lbs/day					
	VOC	**NOx**	**PM10**	**SOx**	**CO**	**Lead**
Stanton 30-day Averages	2311.36 lb/30 day = 77 lb/day	7201.84 lb/30 day= 240 lb/day	4474.40 lb/30 day= 149 lb/day	1515.30 lb/30 day= 51 lb/day	7380.48 lb/30 day = 246 lb/day	0 lb/30 day = 0 lb/day
Rule 212(c)(2) Daily Maximum	30	40	30	60	220	3
Exceed Daily Maximum	Yes	Yes	Yes	Yes	Yes	No

Source: SCAQMD 2018g Table 28

SCAQMD published the public notice for PDOC on February 14, 2018. The public comment period ended on March 15, 2018. The only comments received were from the applicant in a letter dated February 20, 2018. The SCAQMD provided responses in a letter dated April 19, 2018, which agreed to administrative type changes to permit conditions.

Rule 218 – Continuous Emission Monitoring

Each of the proposed turbines would be equipped with an SCR to control NOx emissions and an oxidation catalyst to control CO emissions. The CEMS would be required to be installed and operating no later than 90 days after initial start-up of the turbine, and in accordance with an approved SCAQMD Rule 218 CEMS plan application (standard power plant condition). Compliance with this rule is expected.

Regulation IV – Prohibitions

Rule 401 – Visible Emissions

This rule prohibits the discharge of visible emissions which are as dark, or darker, than Ringelmann 1 for a period aggregating more than three minutes. The gas turbines would be fired exclusively with pipeline quality natural gas and subject to BACT requirements. Therefore, visible emissions are not expected from the turbines and compliance with this rule is expected.

Rule 402 – Nuisance

This rule prohibits discharge of air contaminants or other materials in quantities that cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or public, or have a natural tendency to cause injury or damage to business or property. Nuisance problems are not expected under normal operating conditions of the gas turbines and other equipment. Compliance is anticipated.

Rule 403 – Fugitive Emissions

The provisions of this rule apply to any activity or man-made condition capable of generating fugitive dust. Prohibitions include fugitive dust that remains visible in the atmosphere beyond the property line of the emission source.

During the construction period, the project may be subject to requirements including the submittal of a fully executed Large Operation Notification (Form 403N) to the SCAQMD Compliance Department by an individual who has completed the SCAQMD fugitive Dust Control Class, and daily records that document the specific dust control actions taken.

The DOC is intended to evaluate the operating emissions, including fugitive emissions during the operation of a facility and the control of these emissions. The DOC is not intended to evaluate fugitive emissions during the construction phase. During normal operations, fugitive dust is not expected from the gas turbines, SCR oxidation catalysts, and ammonia tank, therefore, compliance is anticipated.

Rule 407 – Liquid and Gaseous Air Contaminants

This rule limits CO emissions to 2,000 ppm. Compliance with the CO limit of this rule is expected since the turbines are subject to the BACT CO emission limit of 4 ppmv at 15 percent oxygen. Since the gas turbines will be fired by natural gas that complies with the sulfur limit in Rule 431.1, the SO_2 limit does not apply.

Rule 409 – Combustion Contaminants

This rule applies to Stanton turbines. This rule limits combustion generated PM emissions to 0.1 grains/dscf calculated to 12 percent CO_2.The FDOC demonstrated that the PM loading would be 0.012 grains/dscf for Stanton turbines. Therefore, compliance with the 0.1 grains/dscf calculated to 12 percent CO_2 is expected.

Rule 431.1 – Sulfur Content of Gaseous Fuels

This rule requires that the sulfur content as H_2S of the natural gas shall be less than 16 ppmv. The commercial grade natural gas has an average H_2S content of 4 ppm. Compliance is expected.

Rule 475 – Electric Power Generating Equipment

This rule applies to power generating equipment greater than 10 net MW installed after May 7, 1976. This rule limits combustion contaminants as PM to be either less than 11 lbs/hour, or less than 0.01 gr/dscf. For natural gas-fired gas turbine engines almost all PM emissions are PM2.5 emissions. As calculated in FDOC, PM2.5 emissions are 0.004 gr/dscf for both Stanton turbines. Compliance is expected.

Regulation XI – Source Specific Standards

Rule 1134 – Emissions of NOx from Stationary Gas Turbine

The provisions of this rule shall apply to all existing stationary gas turbines, 0.3 megawatt (MW) and larger, as of August 4, 1989. Therefore, as new installations, the proposed turbines are not subject to this rule.

Rule 1135 – Emissions of NOx from Electric Power Generating Systems

This rule applies to electric power generating systems. Paragraph (b)(10) defines "*electric power generating system*" to mean "all boilers, replacement units and approved alternative or advanced combustion resources owned or operated by, and approved alternative or advanced combustion resources and replacement units under contract to sell power to, any one of the following: Southern California Edison, Los Angeles Department of Water and Power, City of Burbank, City of Glendale, City of Pasadena, or any of their successors."

Although Stanton will be supplying power to Southern California Edison's Barre Substation, the proposed simple-cycle turbines do not fall within the meaning of "*alternative source*" or "*advanced combustion resource*". Therefore, this rule is not applicable to Stanton.

Regulation XIII – New Source Review

New emissions sources are subject to the requirements of New Source Review (NSR) as specified in Regulation XIII, which includes SCAQMD Rules 1300 through 1325. For RECLAIM facilities, this rule only applies to pollutants not addressed by Regulation XX RECLAIM. Therefore, criteria pollutants PM10, SOx, VOC and CO are subject to Rules 1300 – 1325 and NOx is restricted through SCAQMD Rules 2000-2013. For clarity corresponding RECLAIM requirement analysis will be included in this section. However, SCAQMD is transitioning away from RECLAIM program to more of a "command and control" program. Power plant plans will be converted by November 2018. The SCAQMD new source review rules are based on both NAAQS and CAAQS.

Rule 1303(a) – BACT

The use of BACT is required for new or modified sources resulting in uncontrolled emission increases of 1 pound per day of any nonattainment air contaminant, ozone depleting compound, or ammonia. Precursors to nonattainment air contaminants are treated as nonattainment air contaminants as well. SCAQMD Rule 1303 requires BACT for NOx (non-RECLAIM), SOx, VOC, PM10 and ammonia. SCAQMD Rule 2005 requires BACT for RECLAIM NOx. In addition, SCAQMD Rules 1701 and 1703 require BACT for CO.

SCAQMD Rule 1303 requires that BACT for sources located at major polluting facilities be at least as stringent as Lowest Achievable Emissions Rate (LAER) defined in the federal Clean Air Act**.** SCAQMD Rule 1302 defines 'major polluting facility'. SCAQMD Rule 1302 was amended on November 4, 2016. The updated thresholds are included in **Air Quality Table 23**. **Air Quality Table 23** includes major facility thresholds and Stanton potential to emit.

Air Quality Table 23
Major Facility Applicability

	Emissions tons/year				
	NOx	**CO**	**VOC**	**SOx**	**PM10**
Major Facility Threshold	10	50	10	70	70
Stanton Potential to Emit	**3.92**	**4.58**	**1.72**	0.3	**2.70**
Exceed Threshold	No	No	No	No	No

Source: SCAQMD 2018g Table 29

As shown in the table above, Stanton is not a major polluting facility for any criteria pollutant. Thus, Rule 1303(a)(1) requires BACT for a minor (non-major polluting) facility for NOx, PM10/PM2.5, SOx, VOC, and ammonia.

SCAQMD Rule 1302(h) defines BACT as "the most stringent emission limitation or control technique which:

(1) has been achieved in practice (AIP) for such category or class of source; or

(2) is contained in any state implementation plan (SIP) approved by the U.S. EPA for such category or class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the Executive Officer or designee that such limitation or control technique is not presently achievable; or

(3) is any other emission limitation or control technique, found by the Executive officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures as listed in the Air Quality Management Plan (AQMP) or rules adopted by the District Governing Board."

A BACT analysis was performed on a pollutant-by-pollutant basis. Detailed BACT determinations were included in the SCAQMD FDOC. **Air Quality Table 24** includes BACT requirements, proposed and guaranteed emissions levels for Stanton turbines. BACT requirements would be included in Air Quality Conditions of Certifications **AQ-A3**, **AQ-A4**, **AQ-A5**, **AQ-A6** and **AQ-A8**.

During commissioning periods, startups, and shutdowns, it is not technically feasible for the turbines to meet BACT limits and the equipment is exempt from meeting BACT requirements during these periods. However, additional conditions of certification restrict emissions levels and operation during these periods to minimize emissions. The additional Conditions of Certification include **AQ-E3**, **AQ-C1** and **AQ-C2**. In lieu of requiring steady state BACT at all times, an alternative BACT which limits and minimizes emissions during periods when steady state BACT is not achievable, such as during commissioning, startups and shutdowns, has also been accepted by EPA.

Air Quality Table 24
Stanton BACT Requirements, Proposed and Guaranteed Emissions Levels

Subcategory/ Ratings/Size	VOC	NOx	SOx	CO	PM10	Inorganic
Natural Gas Fired ≥ 50 MWe *(Part D: BACT Guidelines for Non-Major Polluting Facilities)*	2.0 ppmvd (as methane) @ 15% O_2, 1-hour avg. OR 0.0027 lbs/MMBtu (higher heating value) (10-20-2000)	2.5 ppmvd @ 15% O_2, 1-hour rolling avg. OR 2.0 ppmvd @ 15 %O_2, 3-hour rolling avg. x efficiency (%)1) 34% (10-20-2000)		6.0 ppmvd @ 15% O_2, 3-hour rolling avg. (10-20-2000)		5.0 ppmvd ammonia @ 15% O_2 (10-20-2000)
Stanton Proposed Limits	2.0 ppmvd (as methane) @ 15% O_2, 1-hour avg.	2.5 ppmvd @ 15% O_2, 1-hour avg.	Natural Gas	4.0 ppmvd @ 15% O_2, 1-hour rolling avg.	Natural Gas	5.0 ppmvd ammonia @ 15% O_2
Mitsubishi Hitachi Power Systems Americas Guaranteed Limits, 11/7/17	2.0 ppmvd @ 15% O_2	2.5 ppmvd @ 15% O_2		4.0 ppmvd @ 15% O_2		5.0 ppmvd ammonia @ 15% O_2
Compliance?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Source: SCAQMD 2018g Table 30.

Rule 1303(b)(1) – Modeling

Rule 1303 requires that through modeling, the applicant must substantiate that the proposed facility would not cause a violation, or make significantly worse an existing violation of any AAQS at any receptor location. Rule 1303 requires modeling for NO_2, CO, PM10 and SO_2.

Compliance determinations are different for attainment and nonattainment pollutants. For attainment pollutants, NO_2, CO, SO_2 and PM10 (federal), the peak impact plus the worst–case background concentrations shall not exceed the most stringent AAQS. For nonattainment pollutants, PM10 (state) and PM2.5, where the background concentrations exceed the AAQS, the modeled peak impacts shall not exceed Rule 1303 significant change thresholds.

Stanton performed a complete modeling analysis including the entire facility. SCAQMD reviewed the modeling to determine compliance with SCAQMD rules and regulations. SCAQMD reproduced the modeling analysis and used updated background concentrations from 2014 to 2016. During the project normal operation, for the attainment pollutants, the maximum modeled concentrations, combined with background concentrations, are below the applicable ambient air quality standards. For the nonattainment concentrations, the maximum modeled concentrations are below the Rule 1303 thresholds. During the commissioning period, the maximum modeled concentrations, combined with background concentrations, are below the applicable ambient air quality standards.

Rule 1303(b)(2) – Offsets

Rule 1303(b)(2) requires offsets for a net emission increase of any nonattainment air contaminant (NOx, VOC, PM10 and SOx) unless exempt from offset requirements pursuant to Rule 1304. CO is an attainment pollutant and not a precursor to any nonattainment pollutant, and is therefore not subject to the offset requirements.

Stanton maximum annual emissions for NOx (3.92 tpy), VOC (1.72 tpy), PM10 (2.70 tpy), and SOx (0.3 tpy) for the two turbines are all less than 4 tpy, the threshold for requiring offsets.

Rule 1303(b)(3) – Sensitive Zone Requirements

These rules require credits to be obtained from the appropriate trading zone. Stanton is exempt from providing offsets for this project pursuant to Rule 1304(d)(1)(A), but is expected to be in compliance with this rule if emission reduction credits are required for any future project.

Rule 1303(b)(4) – Facility Compliance

Stanton would be required to comply with all applicable rules and regulation of the SCAQMD.

Rule 1303(b)(5) – Major Polluting Facilities

Stanton will not be a major pollution source and thus will not be subject to Rule 1303(b)(5).

Rule 1304 – Exemptions

SCAQMD Rule 1304(d)(1) states that any new facility that has a potential to emit less than 4 tpy shall be exempt from Rule 1303(b)(2). Stanton annual maximum emissions are all less than 4 tpy, the threshold for requiring offsets. Condition of Certification **AQ-A2** (A63.2) will limit the annual emission limits for NOx, CO, VOC, PM10, and SOx, based on the total combined emissions from both turbines.

Rule 1313 – Permits to Operate

Rule 1313 Section (g) requires permits to have identified BACT conditions and monthly maximum emissions from the permitted source. The following conditions would have corresponding conditions of certification:

<u>Turbines</u>

- BACT – Conditions of Certification **AQ-A3**, **AQ-A4** and **AQ-A5** (A195.1, A195.2, and A195.3) set forth the BACT limits for NOx, CO, and VOC, respectively.
- Monthly Emissions – Conditions of Certification **AQ-A1** (A63.1) sets forth the monthly limits for NOx, CO, VOC, PM10, PM2.5 and SOx.

<u>Selective Catalytic Reduction Systems</u>

- BACT – Condition of Certification **AQ-A8** (A195.4) set forth the BACT limit for the ammonia slip.

- Monthly Emissions – Monthly emission limits are applicable to basic equipment, not control equipment.

Ammonia Tanks

- BACT – Conditions of Certification **AQ-C3** (C157.1) requires the tanks to be equipped with a pressure relief valve set at 2.5 psig. Condition of Certification **AQ-E5** (E144.1) requires the tanks to be vented, during filling, to the vessel from which it is being filled.
- Monthly Emissions – The pressure relief valves and vapor return lines result in no ammonia emissions from the tanks under normal operations.

Rule 1325 – Federal PM2.5 New Source Review Program

This rule applies to major polluting facilities, major modifications to a major polluting facility, or any modifications to an existing facility that would constitute a major polluting facility in areas federally designated as federal nonattainment for PM2.5. This rule applies on a pollutant specific basis to emissions of PM2.5 and its precursors. For major modifications the source must be considered a major source, the modification results in a significant increase and the modification results in a significant net emissions increase.

A major polluting facility means, on a pollutant specific basis, any emissions source located in areas federally designated pursuant to 40 CFR 81.305 as non-attainment for PM2.5, including the South Coast Air Basin (SCAB) which has actual emissions of, or the potential to emit PM2.5, or its precursors at or above the following levels:

(A) 100 tons per year per pollutant until August 14, 2017 or until the effective date of U.S. EPA's approval of the November 4, 2016 amendments to this rule, whichever is later; and,

(B) 70 tons per year per pollutant after August 14, 2017 or upon the effective date of U.S. EPA's approval of the November 4, 2016 amendments to this rule, whichever is later.

According to the U.S. EPA website, Rule 1325, amended 11/4/16, is not SIP-approved as of 12/12/17. As SIP-approval is expected, the applicability analysis assumes the most recent amendment is SIP-approved and the major source threshold is 70 tpy for this rule. PM2.5 emissions are conservatively assumed to be the same as PM10 emissions. Rule 1325 is not applicable to NOx, SO2, VOC, NH_3, and PM2.5 because the potential to emit (PTE) for each of these pollutants is less than 70 tpy.

Regulation XVII – Prevention of Significant Deterioration

The PSD program has been established to protect the deterioration of air quality in areas that already meet the primary NAAQS. The SCAQMD is partially delegated to issue initial PSD permits and for PSD permit modifications. The SCAB has been in attainment for NO_2, SO_2, and CO emissions. In addition, effective 7/26/13, the SCAB has been re-designated to attainment for the 24-hour PM10 national ambient air quality standard. Therefore, the attainment air contaminants are NO_2, SO_2, CO, and PM10.

Rule 1701, 1702, 1706 – PSD Applicability

The SCAQMD is in attainment for the primary NAAQS for NOx, SOx, CO, and PM10. PSD applies to each regulated pollutant. **Air Quality Table 25** demonstrates PSD requirement applicability for each pollutant.

Table 25 – Prevention of Significant Deterioration Applicability

	NOx	PM_{10}	SOx	CO
Stanton Electric Reliability Center (Stanton) Potential to Emit, TPY (*Table 27—Facility Maximum Annual Emissions*)	3.92	2.70	0.3	4.58
Major Stationary Source?	No, potential to emit is less than 250 tpy.	No, potential to emit is less than 250 tpy.	No, potential to emit is less than 250 tpy.	No, potential to emit is less than 250 tpy.
PSD Applicable?	No	No	No	No

As shown in the table above, Stanton is not subject to PSD review for NOx, PM10, SOx, and CO because the potentials to emit for these attainment pollutants do not exceed the applicability thresholds of 250 tpy.

Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases

Air Quality Appendix Air-1 includes the GHG analysis for the proposed Stanton.

Regulation XX – Regional Clean Air Incentives Market (RECLAIM)

Rule 2001 – Applicability

This regulation lists the criteria for inclusion in RECLAIM. Stanton has requested a 4 tpy annual NOx limit to stay out of RECLAIM. Conditions of Certification **AQ-A2** (A63.2) will limit the annual emission limits for NOx, based on the total combined emissions from both turbines, to 7,848 lb/yr NOx.

Regulation XXX – Title V Operating Permit

Stanton is a new facility for which an initial Title V facility permit is required. A proposed Title V permit incorporating permit revisions will be submitted to U.S EPA for a 45-day review. All public participation procedures are required be followed prior to the issuance of the permit.

The public notice is required to include the following:

1. The identity and location of the affected facility;

2. The name and mailing address of the facility's contact person;

3. The identity and address of the SCAQMD as the permitting authority processing the permit;

4. The activity or activities involved in the permit action;

5. The emissions change involved in any permit revision;

6. The name, address, and telephone number of a person whom interested persons may contact to review additional information including copies of the proposed permit, the application, all relevant supporting materials, including compliance documents as defined in paragraph(b)(5) of Rule 3000, and all other materials available to the Executive Officer that are relevant to the permit decision;

7. A brief description of the public comment procedures provided; and

8. The time and place of any proposed permit hearing that may be held or a statement of the procedures to request a proposed permit hearing if one has not already been requested.

The Title V public notice will be combined with the Rule 210 noticing. The public notice periods for both are anticipated to run concurrently.

RESPONSE TO COMMENTS ON THE PSA

DayZen LLC, Applicants final comments on PSA, TN: 223293, docketed on April 30, 2018.

Comment 1: *Page 4.1-65, Condition of Certification **AQ-SC3***

*Staff has proposed Condition of Certification **AQ-SC3,** which establishes specific requirements to reduce fugitive dust emissions during construction. SERC, LLC requests that due to the small size of the site, the requirement to conduct onsite and offsite street sweeping twice daily regardless of actual conditions is unnecessary. SERC, LLC requests the frequency of street sweeping be determined by the onsite Air Quality Construction Mitigation Manager (AQCMM) and has proposed modifying the language accordingly.*

At the PSA Workshop, Staff counsel expressed the concern the condition must include a clear performance standard. SERC, LLC has modified the condition to clarify the performance standard while still allowing the frequency to be determined by the AQCMM. In addition, Staff requested the condition require a log of the sweeping activities be included in the monthly compliance report. SERC, LLC has modified the verification to the condition accordingly.

*I. All paved roads within the construction site shall be swept at **a frequency determined by the AQCMM** ~~least twice daily (or less during periods of precipitation)~~ on days when construction activity **results in tracking** to prevent the accumulation of dirt and debris **to minimize dust plumes**.*

*J. At least the first 500 feet of any paved public roadway exiting the construction site, laydown areas, or construction staging areas, shall be swept at **a frequency determined by the AQCMM,** ~~least twice daily (or less during periods of precipitation)~~**,** on days when construction activity **results in tracking to prevent the accumulation of dirt and debris to minimize dust plumes** or on any other day when dirt or runoff resulting from the construction site activities is visible on the public roadways.*

Verification: *The AQCMM shall provide the CPM a Monthly Compliance Report (MCR) that includes:*

1. A summary of all actions taken to maintain compliance with this condition ***(including sweeping log entries)****;*

2. Copies of any complaints filed with the District in relation to project construction; and

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

Response to Comment 1: Staff revised **AQ-SC3** to incorporate the proposed modifications.

Comment 2: *Page 4.1-69, Condition of Certification* ***AQ-SC8***

On past projects, Staff has proposed a standard condition of certification (usually ***AQ-SC8****) that allows Staff to approve certain modifications to conditions of certification made as a result of modifications to a facility air permit as a Staff-approved amendment. We understand that the Commission is currently proposing to modify its Siting Regulations to authorize Staff to approve such an amendment without the need for Condition of Certification* ***AQ-SC8****. However, the timing and ultimate approval of those regulations is uncertain and therefore SERC, LLC requests Condition of Certification* ***AQ-SC8*** *be added to the Final Staff Assessment (FSA).*

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.

Response to Comment 2: Energy Commission is in process of modifying Siting Regulations to authorize staff approved modifications without the need for Condition of Certification **AQ-SC8**. Staff believes that **AQ-SC8** is not an appropriate way to change the effect of our current regulations and should not be added.

CONCLUSIONS

Staff recommends the adoption of air quality conditions of certification included in the following section.

- Construction impacts would contribute to violations of the ozone and PM10 ambient air quality standards and cause new exceedances of state 24-hour standards. Staff recommends Conditions of Certification **AQ-SC1** to **AQ-SC5** to mitigate the construction-phase impacts of the proposed facility modifications to a less than significant level.
- Operation of the proposed facility would comply with applicable SCAQMD rules and regulations, including New Source Review, BACT requirements, and offset exemption requirements. Staff recommends the inclusion of the district's FDOC conditions as conditions of certification**.**
- The proposed facility would neither cause new violations of any CO, NO_2, or SO_2 ambient air quality standard nor contribute to existing violations for these pollutants. Therefore, the direct CO, NO_2, and SO_2 impacts of the proposed facility are less than significant.
- The NOx and VOC emissions from the proposed facility would contribute to existing violations of state and federal ozone ambient air quality standards. VOC offsets from the district's internal bank would be used to mitigate the ozone precursor impacts to less than significant levels.
- The PM10 emissions and the PM10 precursor emissions from the proposed facility would contribute to the existing violations of PM10 ambient air quality standards. The SCAQMD would offset the PM10 emissions from its internal bank to mitigate the PM10 impacts of the combustion gas turbines to a less than significant level. The offsets would be in sufficient quantities to satisfy Energy Commission staff's recommendation that all nonattainment pollutant and precursor emissions be offset at least one-to-one.
- The SOx emissions from the proposed facility are considered precursor emissions to PM10 and could contribute to the existing violations of PM10 ambient air quality standards. SOx offsets from the district's internal bank would be used to mitigate the PM10 impacts to a less than significant level.
- Implementation of the conditions of certification and the air quality conditions and practices described in the analysis would reduce potential adverse impacts to less than significant levels and ensure that the project's emissions are mitigated to less than significant.
- With the adoption of the attached conditions of certification, Stanton would comply with all applicable laws, ordinances, regulations, and standards related to air quality as described in pertinent portions of this analysis.

PROPOSED CONDITIONS OF CERTIFICATION

The air quality conditions of certification are divided into two sections; staff recommended conditions of certification and the SCAQMD FDOC conditions. Staff conditions are additional conditions of certification recommended to provide CEQA mitigation for the project. The proposed staff recommended conditions of certification are identified as the **AQ-SCx** series of conditions.

The SCAQMD has a unique system of structuring and numbering permit conditions. In order for the reader to avoid confusion between the SCAQMD numbering and Energy Commission numbering, **Air Quality Table 26** cross references the conditions in the SCAQMD FDOC to the conditions in the FSA as proposed.

Air Quality Table 26
SCAQMD Permit Conditions with Corresponding Energy Commission Conditions of Certification

SCAQMD Permit Conditions	Energy Commission Condition of Certification	SCAQMD Permit Conditions	Energy Commission Condition of Certification
F9.1	**AQ-F1**	D29.1	**AQ-D1**
A63.1	**AQ-A1**	D29.2	**AQ-D2**
A63.2	**AQ-A2**	D29.3	**AQ-D3**
A195.1	**AQ-A3**	D82.1	**AQ-D4**
A195.2	**AQ-A4**	D82.2	**AQ-D5**
A195.3	**AQ-A5**	E144.1	**AQ-E5**
A195.4	**AQ-A8**	E193.1	**AQ-E1**
A195.5	**AQ-A6**	E193.2	**AQ-E2**
A327.1	**AQ-A7**	E193.3	**AQ-E3**
B61.1	**AQ-B1**	E193.4	**AQ-E4**
C1.1	**AQ-C1**	H23.1	**AQ-H1**
C1.2	**AQ-C2**	H23.2	**AQ-H2**
C157.1	**AQ-C3**	H23.3	**AQ-H3**
D12.1	**AQ-D6**	H23.4	**AQ-H4**
D12.2	**AQ-D7**	K40.1	**AQ-K1**
D12.3	**AQ-D8**	K67.1	**AQ-K2**

STAFF RECOMMENDED CONDITIONS

AQ-SC1 Air Quality Construction/Demolition Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with **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 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 and the South Coast Air Quality Management District (District). 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 minimizing fugitive dust emissions created from construction activities and 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 linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of Condition of Certification **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.

B. No vehicle shall exceed 10 miles per hour on unpaved areas within the construction site.

C. Visible speed limit signs shall be posted at the construction site entrances.

D. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned 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 similar measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.

I. All paved roads within the construction site shall be swept at a frequency determined by the AQCMM on days when construction activity results in tracking to prevent the accumulation of dirt and debris to minimize dust plumes.

J. At least the first 500 feet of any paved public roadway exiting the construction site, laydown areas, or construction staging areas, shall be swept at a frequency determined by the AQCMM on days when construction activity results in tracking to prevent the accumulation of dirt and debris to minimize dust plumes or on any other day when dirt or runoff resulting from the construction site activities 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 potential to cause visible emissions shall be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard, so that no visible emissions occur.

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

N. Disturbed areas shall be re-vegetated as soon as practical.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report (MCR) that includes:

1. A summary of all actions taken to maintain compliance with this condition (including sweeping log entries);

2. Copies of any complaints filed with the District in relation to project construction; and

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

AQ-SC4 Dust Plume Response Requirement: The AQCMM or 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**,** or (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 and shall include a section in the AQCMP detailing how the additional mitigation measures will be accomplished within the time limits specified:

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

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

Step 3: The AQCMM or delegate shall direct a temporary shutdown of the activity causing the emissions if step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown 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 in the MCR that includes:

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 MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the following 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. This good faith effort shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms. 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 10 working days or less.

   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 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, provided that: 1) the CPM is informed within 10 working days of the termination, 2) a replacement for the equipment item in question meeting the controls required in item “B” occurs within 10 days of termination of the use, and 3) 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 manufacturers' 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 shall employ electric motors when feasible.

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

1. A summary of all actions taken to maintain compliance with this condition,

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

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

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

DISTRICT'S PERMITTED EQUIPMENT AND CONDITIONS

Equipment

ID No.	Equipment Descriptions
PROCESS 1: INTERNAL COMBUSTION – POWER GENERATION	
D1	GAS TURBINE, NO. 1, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LM6000 PC SPRINT, 484.2 MMBTU/HR (HHV) AT 40 DEG F, WITH WATER INJECTION WITH
B2	GENERATOR, 51.049 MW GROSS AT 40 DEG F
B16	BATTERY ENERGY STORAGE SYSTEM, 10 MW
C3	CO OXIDATION CATALYST, NO. 1, BASF, MODEL CAMET, 68.2 CU. FT.; WIDTH: 23 FT 4.8 IN; HEIGHT: 25 FT; LENGTH: 2.1 IN
C4	SELECTIVE CATALYTIC REDUCTION, NO. 1, CORMETECH, MODEL CUSTOM, TITANIA-BASED CERAMIC, 1385 CU. FT.; WIDTH: 23 FT 4.8 IN; HEIGHT: 25 FT; LENGTH: 2 FT 8 IN WITH
B5	AMMONIA INJECTION, AQUEOUS AMMONIA
S6	STACK, TURBINE NO. 1, HEIGHT: 71 FT; DIAMETER: 12 FT
D7	GAS TURBINE, NO. 2, SIMPLE-CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL LM6000 PC SPRINT, 484.2 MMBTU/HR (HHV) AT 40 DEG F, WITH WATER INJECTION WITH
B8	GENERATOR, 51.049 MW GROSS AT 40 DEG F
B17	BATTERY ENERGY STORAGE SYSTEM, 10 MW
C9	CO OXIDATION CATALYST, NO. 2, BASF, MODEL CAMET, 68.2 CU. FT.; WIDTH: 23 FT 4.8 IN; HEIGHT: 25 FT; LENGTH: 2.1 IN
C10	SELECTIVE CATALYTIC REDUCTION, NO. 2, CORMETECH, MODEL CUSTOM, TITANIA-BASED CERAMIC, 1385 CU. FT.; WIDTH: 23 FT 4.8 IN; HEIGHT: 25 FT; LENGTH: 2 FT 8 IN WITH
B11	AMMONIA INJECTION, AQUEOUS AMMONIA
S12	STACK, TURBINE NO. 2, HEIGHT: 71 FT; DIAMETER: 12 FT
D13	STORAGE TANK, AQUEOUS AMMONIA 19 PERCENT, 5000 GALS; DIAMETER: 10 FT; HEIGHT: 8 FT 6 IN.
E14	RULE 219 EXEMPT EQUIPMENT, COATING EQUIPMENT, PORTABLE, ARCHITECTURAL COATING
E15	RULE 219 EXEMPT EQUIPMENT, AIR CONDITIONING UNITS

The following conditions were developed by the SCAQMD and are obtained from the FDOC.

Facility Conditions

AQ-F1 Except for open abrasive blasting operations, the project owner shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[RULE 401, 3-2-1984; RULE 401, 11-9-2001]

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

Device Conditions

AQ-A1 The project owner shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
NOx	Less than or equal to 3601 LBS IN ANY CALENDAR MONTH
CO	Less than or equal to 3690 LBS IN ANY CALENDAR MONTH
VOC	Less than or equal to 1156 LBS IN ANY CALENDAR MONTH
PM10	Less than or equal to 2237 LBS IN ANY CALENDAR MONTH
PM2.5	Less than or equal to 2237 LBS IN ANY CALENDAR MONTH
SOx	Less than or equal to 758 LBS IN ANY CALENDAR MONTH

For the purposes of this condition, the above monthly emission limits shall be based on the emissions from a single turbine.

The turbine shall not commence with normal operation until the commissioning process has been completed. Normal operation commences when the turbine is able to supply electrical energy to the power grid as required under contract with the relevant entities. The SCAQMD shall be notified in writing once the commissioning process for each turbine is completed.

Normal operation may commence in the same calendar month as the completion of the commissioning process provided the turbine is in compliance with the above emission limits.

For a month during which both commissioning and normal operation take place, the monthly emissions shall be the sum of the commissioning emissions and the normal operation emissions.

For the commissioning period, CO, VOC, PM10/PM2.5, and SOx emissions shall be calculated using the following emission factors:

Pre-Catalyst Phase: CO, 155.08 lb/mmcf; VOC, 24.60 lb/mmcf; PM10/PM2.5, 32.09 lb/mmcf; and SOx, 2.14 lb/mmcf. The pre-catalyst phase starts with step 1 of the commissioning activities (first fire and full speed, no load, not synchronized, no generator excitation) and ends with step 3 (first synchronization). The steps referenced herein are described in the commissioning emissions (per turbine) table provided by Stanton Energy Reliability Center.

Post-Catalyst Phase: CO, 6.70 lb/mmcf; VOC, 3.42 lb/mmcf; PM10/PM2.5, 8.29 lb/mmcf; and SOx, 2.14 lb/mmcf. The post-catalyst phase starts with step 4 of the commissioning activities (synchronization and ramp to full load, tuning water, ammonia (rough), and AVR (as needed), gas compressor turning) and ends with step 6 (full load operation with water injection and SPRINT in service and SCR/ammonia tuning).

For the commissioning period (pre-catalyst and post-catalyst phases), NOx emissions shall be measured with an SCAQMD Method 100.1 source test van CEMS.

For normal operation, VOC, PM10/PM2.5, and SOx emissions shall be calculated using the following emission factors: VOC, 3.26 lb/mmcf; PM10/PM2.5, 6.32 lb/mmcf; and SOx, 2.14 lb/mmcf (based on 0.75 grains S/100 scf).

For normal operation, the NOx and CO emission shall be measured with certified NOx CEMS and CO CEMS, respectively. For the interim period after commissioning but prior to CEMS certification, and in the event of CEMS failure subsequent to CEMS certification, the emission factors shall be as follows: NOx, 10.17 lb/mmcf; CO, 10.42 lb/mmcf.

The project owner shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall provide emissions summary data in compliance with his condition as part of the Quarterly Operation reports (**AQ-SC7**).

AQ-A2 The project owner shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
NOx	Less than or equal to 7,848 LBS IN ANY ONE YEAR
CO	Less than or equal to 9,143 LBS IN ANY ONE YEAR
VOC	Less than or equal to 3,432 LBS IN ANY ONE YEAR
PM10	Less than or equal to 5,412 LBS IN ANY ONE YEAR
PM2.5	Less than or equal to 5,412 LBS IN ANY ONE YEAR
SOx	Less than or equal to 595 LBS IN ANY ONE YEAR

For the purposes of this condition, the above annual emission limits shall be based on the total combined emissions from both turbines (D1 and D7).

The annual emissions of the facility for purposes of demonstrating compliance with this condition shall be calculated from the monthly emissions, including emissions for the commissioning period, as required by condition A63.1 (**AQ-A1**), except the normal operation annual emission factor for SOx is 0.72 lb/mmcf (based on 0.25 grains S/100 scf (annual average)).

The project owner shall maintain records to demonstrate compliance with this condition and shall make such records available to the SCAQMD Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD. The records shall include, but not be limited to, natural gas usage in a calendar month and automated monthly and annual calculated emissions.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall provide emissions summary data in compliance with his condition as part of the 4th Quarterly Operation reports (**AQ-SC7**).

AQ-A3 The 2.5 PPMV NOx emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen.

This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

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

AQ-A4 The 4.0 PPMV CO emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen.

This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

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

AQ-A5 The 2.0 PPMV VOC emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen.

This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

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

AQ-A6 The 25 PPMV NOx emission limit(s) is averaged over 1 hour, dry basis at 15 percent oxygen.

This limit shall not apply to turbine commissioning, startup, and shutdown periods.

[40 CFR 60 Subpart KKKK, 7-6-2006]

[Devices subject to this condition: D1, D7]

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

AQ-A7 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

[RULE 475, 10-8-1976; RULE 475, 8-7-1978]

[Devices subject to this condition: D1, D7]

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

AQ-A8 The 5.0 PPMV NH_3 emission limit is averaged over 1 hour, dry basis at 15 percent oxygen.

This limit shall not apply to turbine commissioning, startup, and shutdown periods.

The project owner shall calculate and continuously record the NH_3 slip concentration using the following equation:

NH_3 (ppmvd) = [a-b*c/1,000,000]*1,000,000/b, where:

a = NH_3 injection rate (lb/hr)/17(lb/lb-mol)

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

c = change in measured NOx across the SCR (ppmvd at 15% O2)

The project owner shall install and maintain a NOx analyzer to measure the SCR inlet NOx ppmv accurate to within plus or minus 5 percent calibrated at least once every 12 months. The project owner shall use the method described above or another alternative method approved by the Executive Officer.

The ammonia slip calculation procedure shall be in effect no later than 90 days after initial startup of the turbine.

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information without corroborative data using an approved reference method for the determination of ammonia.

The District may require the installation of a CEMS designed to monitor ammonia concentrations if the District determines that a commercially available CEMS has been proven to be accurate and reliable and that an adequate Quality Assurance/Quality Control protocol for the CEMS has been established. The District or another agency must establish a District approved Quality Assurance/Quality Control protocol prior to the ammonia CEMS being a requirement.

The above ammonia slip calculation and the annual testing under D29.3 (**AQ-D3**) shall not be required if a District approved ammonia CEMS is installed.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: C4, C10]

Verification: The project owner shall install, calibrate, maintain, and the monitoring system according to a District-approved monitoring plan. Prior to the installation the project owner shall submit a monitoring plan to the CPM for review and approval. The project owner shall include exceedances of the hourly ammonia slip limit and calibration reports as part of the Quarterly Operation Reports (**AQ-SC7**).

AQ-B1 The project owner shall not use natural gas containing the following specified compounds:

Compound	Range	Grain per 100 scf
H_2S	Greater than	0.25

This concentration limit is an annual average based on monthly samples of natural gas composition or gas supplier documentation. Gaseous fuel samples shall be tested using District Method 307-91 for total sulfur calculated as H_2S.

[RULE 1303(a)(1)-BACT; 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall include documentation demonstrating compliance 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-C1 The project owner shall limit the number of start-ups to no more than 124 in any one calendar month.

For the purposes of this condition, the limits are for one turbine, except the annual limit is the combined total for two turbines (D1 and D7). The number of startups shall not exceed 4 startups in any one day. The number of startups shall not exceed 1000 in any calendar year.

A startup shall not exceed 15 minutes. The NOx emissions from a startup shall not exceed 3.6 lbs. The CO emissions from a startup shall not exceed 5.3 lbs.

The beginning of startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

The project owner shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC7**). The project owner shall provide records including a table documenting the type of startup, duration and date of occurrence.

AQ-C2 The project owner shall limit the number of shutdowns to no more than 124 in any one calendar month.

For the purposes of this condition, the limits are for one turbine, except the annual limit is the combined total for two turbines (D1 and D7). The number of shutdowns shall not exceed 4 shutdowns in any one day. The number of shutdowns shall not exceed 1000 in any calendar year.

Each shutdown shall not exceed 10 minutes. The NOx emissions from a shutdown event shall not exceed 0.55 lbs. The CO emissions from a shutdown event shall not exceed 0.24 lbs.

The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition and the records shall be made available to District personnel upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC7**). The project owner shall provide records including a table documenting each shutdown, and indicating the duration and date of occurrence.

AQ-C3 The project owner shall install and maintain a pressure relief valve set at 2.3 psig.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D13]

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

AQ-D1 The project owner shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be Tested	Required Test Method(s)	Averaging Time	Test Location
NOx emissions	District Method 100.1	1 hour	Outlet of the SCR serving this equipment
CO emissions	District Method 100.1	1 hour	Outlet of the SCR serving this equipment
SOx emissions	AQMD Laboratory Method 307-91	District Approved Averaging Time	Fuel Sample
VOC emissions	District Method 25.3 Modified	1 hour	Outlet of the SCR serving this equipment
PM10 emissions	EPA Method 201A / District Method 5.1	District-Approved Averaging Time	Outlet of the SCR serving this equipment

Pollutant(s) to be Tested	Required Test Method(s)	Averaging Time	Test Location
PM2.5 emissions	EPA Method 201A and 202	District-Approved Averaging Time	Outlet of the SCR serving this equipment
NH_3 emissions	District Method 207.1	1 hour	Outlet of the SCR serving this equipment

Note: SCAQMD Source Testing Dept. indicates District Method 207.1 is the current standard ammonia source test method.

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

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

The test shall be conducted in accordance with a District approved source test protocol. The protocol shall be submitted to the SCAQMD engineer no later than 90 days before the proposed test date and shall be approved by the District before the test commences.

The test protocol shall include the proposed operating conditions of the turbine during the tests, the identity of the testing lab, a statement from the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.

The sampling time for PM and PM2.5 tests shall be 4 hours or longer as necessary to obtain a measureable amount of sample.

The tests shall be conducted when the turbine is operating at loads of 50, 75, and 100 percent of maximum load.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by SCAQMD, the project owner shall use SCAQMD Method 25.3 modified as follows:

a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,

b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and

c) Analysis of Summa canisters per the canister analysis portion of AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified AQMD Method 25.3, nor does it mean that it may be used in lieu of AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

For purposes of this condition, an alternative test method may be allowed for any of the above pollutants upon concurrence by EPA, CARB, and SCAQMD.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration and/or monthly emissions limit.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

Verification: The project owner shall submit the proposed protocol for the initial source tests no later than 90 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall notify the District and CPM no later than 10 days prior to the proposed initial source test of the date and time of the scheduled test.

AQ-D2 The project owner shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be Tested	Required Test Method(s)	Averaging Time	Test Location
SOx emissions	AQMD Laboratory Method 307-91	District Approved Averaging Time	Fuel Sample
VOC emissions	District Method 25.3 Modified	1 hour	Outlet of the SCR serving this equipment
PM10 emissions	EPA Method 201A / District Method 5.1	District-Approved Averaging Time	Outlet of the SCR serving this equipment

The test(s) shall be conducted at least once every three years.

The test shall be conducted in accordance with a District approved source test protocol. The test shall be conducted and the results submitted to the District within 60 days after the test date. The SCAQMD shall be notified of the date and time of the test at least 10 days prior to the test.

The sampling time for the PM10 test(s) shall be 4 hours or longer as necessary to obtain a measureable amount of sample.

The test shall be conducted when the turbine is operating at 100 percent of maximum load.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits, as determined by SCAQMD, the project owner shall use Method 25.3 modified as follows:

a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,

b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and

c) Analysis of Summa canisters per the canister analysis portion of AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified AQMD Method 25.3, nor does it mean that it may be used in lieu of AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

For purposes of this condition, an alternative test method may be allowed for any of the above pollutants upon concurrence by EPA, CARB, and SCAQMD.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration and/or monthly emissions limit.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall test according to the original protocol. If changes to the testing methods or testing conditions are proposed then the project owner shall submit a revised protocol for the source tests no later than 45 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall submit the source test results no later than 60 days following the source test date to both the District and CPM. The project owner shall notify the District and CPM no later than 10 days prior to the proposed initial source test of the date and time of the scheduled test.

AQ-D3 The project owner shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be Tested	Required Test Method(s)	Averaging Time	Test Location
NH_3 emissions	District Method 207.1	1 hour	Outlet of the SCR serving this equipment

Note: SCAQMD Source Testing Dept. indicates District Method 207.1 is the current standard ammonia source test method.

The test shall be conducted in accordance with a District approved source test protocol. The test shall be conducted and the results submitted to the District within 60 days after the test date. The SCAQMD shall be notified of the date and time of the test at least 10 days prior to the test.

The test shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter. The NOx concentration, as determined by the certified CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable or not yet certified, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period.

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall test according to the original protocol. If changes to the testing methods or testing conditions are proposed then the project owner shall submit a revised protocol for the source tests no later than 45 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall submit the source test results no later than 60 days following the source test date to both the District and CPM. The project owner shall notify the District and CPM no later than 10 days prior to the proposed initial source test of the date and time of the scheduled test.

AQ-D4 The project owner shall install and maintain a CEMS to measure the following parameters:

CO concentration in ppmv.

Concentrations shall be corrected to 15 percent oxygen on a dry basis for the purpose of demonstrating compliance with the BACT limit of 4.0 ppmvd CO at 15% O2.

The CEMS shall be installed and operated to measure CO concentrations over a 15 minute averaging time period.

The CEMS shall be installed and operating no later than 90 days after initial start-up of the turbine, and in accordance with an approved SCAQMD Rule 218 CEMS plan application. The project owner shall not install the CEMS prior to receiving initial approval from SCAQMD.

The initial certification testing shall be completed and submitted to the SCAQMD within 90 days of the conclusion of the turbine commissioning period. For the interim period after commissioning but prior to CEMS certification, and in the event of CEMS failure subsequent to CEMS certification, the project owner shall use the emission factor for CO provided in condition A63.1 for these purposes.

The CEMS will convert the actual CO concentrations to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.

CO Emission Rate, lbs/hr = K*Cco*Fd[20.9/(20.9% - $\%O_2$ d)][(Qg * HHV)/10E+06], where:

1. K = 7.267 *10E-08 (lb/scf)/ppm
2. Cco = Average of four consecutive 15 min. average CO concentrations, ppm
3. Fd = 8710 dscf/MMBTU natural gas
4. $\%O_2$ d = Hourly average % by volume O_2 dry, corresponding to Cco
5. Qg = Fuel gas usage during the hour, scf/hr
6. HHV = Gross high heating value of fuel gas, BTU/scf

[RULE 218, 5-14-1999; RULE 218.1, 5-14-1999; RULE 218.1, 5-14-2012; RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall submit the SCAQMD approved CEMS plan to the CPM within 90 days of SCAQMD approval. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-D5 The project owner shall install and maintain a CEMS to measure the following parameters:

NOx concentration in ppmv.

Concentrations shall be corrected to 15 percent oxygen on a dry basis for the purpose of demonstrating compliance with the BACT limit of 2.5 ppmvd NOx at 15% O2.

The CEMS shall be installed and operated to measure NOx concentrations over a 15 minute averaging time period.

The CEMS will convert the actual NOx concentrations to mass emission rates (lb/hr) and record the hourly emission rates on a continuous basis.

The CEMS shall be installed and operating no later than 90 days after initial start-up of the turbine, and in accordance with an approved CEMS certification application submitted in compliance with 40 CFR Part 60 Subpart KKKK and 40 CFR Part 75. The project owner shall not install the CEMS prior to receiving initial approval from SCAQMD.

The initial certification testing shall be completed and submitted to the SCAQMD within 90 days of the conclusion of the turbine commissioning period. During the interim period between the conclusion of the commissioning period and the provisional certification date of the CEMS, and in the event of CEMS failure subsequent to CEMS certification, the project

owner shall use the emission factor for NOx provided in condition A63.1 (**AQ-A1**) for these purposes.

The NOx CEMS shall comply with the requirements of conditions D82.2 (**AQ-D5**), H23.1 (**AQ-H1**), and H23.2 (**AQ-H2**).

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; 40 CFR 60 Subpart KKKK, 7-6-2006; 40 CFR 75-Acid Rain CEM, 1-18-2012]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall submit the SCAQMD approved CEMS plan to the CPM within 90 days of SCAQMD approval. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-D6 The project owner shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH_3).

The project owner shall also install and maintain a device to continuously record the parameter being measured. Continuously record shall be defined as measuring at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour.

The flow meter shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The project owner shall maintain the ammonia injection rate between 15 and 200 pounds per hour, except during startups and shutdowns.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: C4, C10]

Verification: The project owner shall demonstrate 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-D7 The project owner shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The project owner shall also install and maintain a device to continuously record the parameter being measured. Continuously record shall be defined as measuring at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour.

The temperature gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 460 degrees F and 855 degrees F, except during startups and shutdowns.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: C4, C10]

Verification: The project owner shall demonstrate 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-D8 The project owner shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches water column.

The project owner shall also install and maintain a device to continuously record the parameter being measured. Continuously record shall be defined as measuring at least once every month and shall be calculated based upon the average of the continuous monitoring for that month.

The pressure gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The pressure differential shall not exceed 6.0 inches water column.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: C4, C10]

Verification: The project owner shall demonstrate 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-E1 The project owner shall upon completion of construction, operate and maintain this equipment according to the following requirements:

In accordance with all air quality mitigation measures stipulated in the final California Energy Commission decision for the 16-AFC-01 project.

[CA PRC CEQA, 5-12-2017]

[Devices subject to this condition: D1, C3, C4, D7, C9, C10, D13]

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

AQ-E2 The project owner shall install this equipment according to the following requirements:

The Permit to Construct listed in Section H shall expire one year from the Permit to Construct issuance date, unless a Permit to Construct extension has been granted by the Executive Officer or unless the equipment has been constructed and the project owner has notified the SCAQMD Executive Officer prior to the operation of the equipment, in which case the Permit to Construct serves as a temporary Permit to Operate.

[RULE 202, 5-7-1976; RULE 202, 12-3-2004; RULE 205, 1-5-1990]

[Devices subject to this condition: D1, C3, C4, D7, C9, C10, D13]

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

AQ-E3 The project owner shall operate and maintain this equipment according to the following requirements:

Total commissioning hours shall not exceed 100 hours of fired operation for each turbine from the date of initial turbine start-up. Of the 100 hours, commissioning hours without control (pre-catalyst phase as defined in condition A63.1 (**AQ-A1**)) shall not exceed 20 hours.

Two turbines may be commissioned at the same time.

The project owner shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The project owner shall provide the SCAQMD with written notification of the initial startup date of each turbine.

The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition and the records shall be made available to the District personnel upon request. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, natural gas fuel usage for the pre-catalyst phase, and natural gas fuel usage for the post-catalyst phase (pre-catalyst and post-catalyst phases as defined in condition A63.1 (**AQ-A1**)).

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall submit all records including the total number of commissioning hours, number of commissioning hours without control, natural gas fuel usage for the pre-catalyst phase, and natural gas fuel usage for the post-catalyst phase per turbine to demonstrate compliance with this condition as part of the Quarterly Operational Report required in **AQ-SC7**. The project owner shall make the site available for inspection by representatives of the District, ARB, U.S. EPA and the Energy Commission.

AQ-E4 The project owner shall upon completion of the construction, operate and maintain this equipment according to the following requirements:

The 120 lbs/MMBtu CO_2 emission limit for non-base load turbines shall apply.

Compliance with the 120 lbs/MMBtu CO_2 emission limit shall be determined on a 12-operating-month rolling average basis.

This turbine shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart TTTT, including applicable requirements for recordkeeping and reporting.

[40 CFR 60 Subpart TTTT, 10-23-2015]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations to demonstrate compliance with this condition as part of the 4th quarter Quarterly Operational Report required in **AQ-SC7**.

AQ-E5 The project owner shall vent this equipment, during filling, only to the vessel from which it is being filled.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition: D13]

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

AQ-H1 This equipment is subject to the applicable requirements of the following Rules or Regulations:

Contaminant	Rule	Rule/Subpart
NOx	40 CFR 60, SUBPART	KKKK
SO2	40 CFR 60, SUBPART	KKKK

The NOx CEMS shall comply with the requirements of conditions D82.2 (**AQ-D5**), H23.1 (**AQ-H1**), and H23.2 (**AQ-H2**).

The NOx CEMS shall comply with the applicable requirements of §60.13, §60.4335(b), §60.4340(b)(1) and §60.4345 for monitoring.

The NOx CEMS shall comply with the applicable requirements of §60.4350 for identifying excess emissions.

The project owner shall comply with the requirements of §60.7(c), §60.4375, §60.4380, and §60.4395 for reporting excess emissions and monitor downtime.

The performance evaluation of the NOx CEMS shall be conducted as part of the initial performance test of the turbine required no later than 180 days after initial start-up by §60.8, in accordance with the requirements of §60.4405. The initial performance test of the turbine shall be conducted to demonstrate compliance with the §60.4320 limit of 25.0 ppmv NOx at 15% O2, 1-hour averaging.

[40 CFR 60 Subpart A, 6-3-2016; 40 CFR 60 Subpart KKKK, 7-6-2006]

[Devices subject to this condition: D1, D7]

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

AQ-H2 This equipment is subject to the applicable requirements of the following Rules or Regulations:

Contaminant	Rule	Rule/Subpart
NO_x	40 CFR	Part 75
SO_2	40 CFR	Part 75

The NOx CEMS shall comply with the requirements of conditions D82.2 (**AQ-D5**), H23.1 (**AQ-H1**), and H23.2 (**AQ-H2**).

The project owner shall comply with the applicable requirements of §75.4 for monitoring systems installation and certification testing compliance dates.

The NOx CEMS shall comply with the applicable requirements of §75.10 for general operating requirements.

The NOx CEMS shall comply with the applicable requirements of §75.12 for specific provisions for monitoring NOx emission rate.

The project owner shall comply with §75.20 for the initial certification requirements for the NOx CEMS.

The project owner shall comply with §75.21 for the quality assurance and quality control requirements for the NOx CEMS.

The project owner shall use the reference test methods in §75.22, or equivalent method(s) approved by the EPA.

The project owner shall comply with §75.24 for out-of-control periods and adjustment for system bias requirements for the NOx CEMS.

The project owner shall comply with the applicable requirements of Subpart D--Missing Data Substitution Procedures.

The project owner shall comply with the applicable requirements of Subpart F — Recordkeeping Requirements.

The project owner shall comply with the applicable requirements of Subpart G — Reporting Requirements.

The project owner shall measure and record SO_2 emissions by using the applicable procedures specified in appendix D to Part 75 for estimating hourly SO_2 mass emissions, pursuant to §75.11(d)(2).

The project owner shall measure and record CO_2 emissions by following the procedures in appendix G to Part 75 for estimating daily CO_2 mass emissions, pursuant to §75.10(a)(3)(ii) and §75.13(b).

[40 CFR 75-Acid Rain CEM, 1-18-2012]

[Devices subject to this condition: D1, D7]

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

AQ-H3 This equipment is subject to the applicable requirements of the following Rules or Regulations:

Contaminant	Rule	Rule/Subpart
Refrigerants	District Rule	1415

[Rule 1415, 12-3-2010]

[Devices subject to this condition: E15]

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

AQ-H4 This equipment is subject to the applicable requirements of the following Rules or Regulations:

Contaminant	Rule	Rule/Subpart
Refrigerants	40 CFR 82, Subpart	F

[40 CFR 82 Subpart F, 6-25-2013]

[Devices subject to this condition: E15]

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

AQ-K1 The project owner shall provide to the District a source test report in accordance with the following requirements:

Source test results shall be submitted to the District no later than 90 days after the source tests required by conditions D29.1 (**AQ-D1**), D29.2 (**AQ-D2**), and D29.3 (**AQ-D3**), are conducted.

Emission data shall be expressed in terms of concentration (ppmv), corrected to 15 percent oxygen (dry basis), mass rate (lbs/hr), lbs/MM cubic feet, and

lbs/MMBtu. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

All exhaust flow rates shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition: D1, D7]

Verification: The project owner shall submit the source test results no later than 90 days following the source test date to both the District and CPM.

AQ-K2 The project owner shall keep records, in a manner approved by the district, for the following parameter(s) or item(s):

For architectural applications where no thinners, reducers, or other VOC containing materials are added, maintain semi-annual records for all coating consisting of (a) coating type, (b) VOC content as supplied in grams per liter (g/l) of materials for low-solids coatings, (c) VOC content as supplied in g/l of coating, less water and exempt solvent, for other coatings.

For architectural applications where thinners, reducers, or other VOC containing materials are added, maintain daily records for each coating consisting of (a) coating type, (b) VOC content as applied in grams per liter (g/l) of materials used for low-solids coatings, (c) VOC content as applied in g/l of coating, less water and exempt solvent, for other coatings.

[RULE 3004(a)(4) - Periodic Monitoring, 12-12-1997]

[Devices subject to this condition: E14]

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

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SERC 2018g – DayZen LLC (TN 223189). Stanton Energy Reliability Center LLC's Initial Comments on the Preliminaty Staff Assessment – Attachment A, App.5.1E Replacement. Submitted to CEC/Docket Unit on April 12, 2018.

SERC 2018i – DayZen LLC/Scott A. Galati (TN 223293). Stanton Energy Reliability Center LLC's Final Comments on the Preliminary Staff Assessment, dated April 30, 2018. Submitted to CEC/Docket Unit on April 30, 2018.

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ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	AMS/EPA Regulatory Model
AFC	Application for Certification
AIP	Achieved in Practice
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACT	Best Available Control Technology
bhp	brake horsepower
Btu	British Thermal Unit
CAAQS	California Ambient Air Quality Standards
CA ISO	California Independent System Operator
CAM	Compliance Assurance Monitoring
CCR	California Code of Regulations
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CPM	(CEC) Compliance Project Manager
CTG	Combustion Turbine Generator
DPM	Diesel Particulate Matter
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ERC	Emission Reduction Credit
ESEC	El Segundo Energy Center
FDOC	Final Determination of Compliance
FSA	Final Staff Assessment (this document)
GE	General Electric
GHG	Greenhouse Gas
gr/dscf	Grains per Dry Standard Cubic Foot
H_2S	Hydrogen Sulfide
HAPs	Hazardous Air Pollutants
hp	Horsepower

hr	Hour
HSC	Health and Safety Code
ICE	Internal Combustion Engine
lb/mmscf	Pounds per Million Standard Cubic Feet
LAER	Lowest Achievable Emission Rate
Lb(s)	Pounds
LLC	Limited Liability Company
LORS	Laws, Ordinances, Regulations and Standards
MCR	Monthly Compliance Report
m^3	Cubic Meter
$\mu g/m^3$	Microgram per Cubic Meter
mg/m^3	Milligrams per Cubic Meter
MMBtu	Million British Thermal Units
$MTCO_2$	Metric Ton of Carbon Dioxide
MW	Megawatts (1,000,000 Watts)
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Protection Act
NESHAP	National Emission Standard for Hazardous Air Pollutants
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen or Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	Oxygen
O_3	Ozone
OTC	Once-Through-Cooling
Pb	Lead
PDOC	Preliminary Determination of Compliance
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter
PM2.5	Particulate Matter less than 2.5 microns in diameter
Ppb	Parts Per Billion
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
PTC	Permit to Construct
PTE	Potential to Emit
PTO	Permit to Operate
RECLAIM	Regional Clean Air Incentives Market
RTC	RECLAIM Trade Credit
RTO	Regenerative Thermal Oxidizer
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
scf	standard cubic feet
SCE	Southern California Edison
SERC	Stanton Energy Reliability Center
SIP	State Implementation Plan
SCR	Selective Catalytic Reduction
SO_2	Sulfur Dioxide
SO_4	Sulfate
SOx	Oxides of Sulfur
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SWRCB	California State Water Resources Control Board
TCM	Transportation Control Measures
tpy	tons per year
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

AIR QUALITY APPENDIX AIR-1
GREENHOUSE GAS EMISSIONS

Testimony of Tao Jiang, PhD, PE and David Vidaver

SUMMARY

The Stanton Energy Reliability Center (Stanton) project is a proposed addition to the state's electricity system. It would be an efficient, new, dispatchable natural gas-fired facility with simple-cycle units that would provide fast start capabilities but would produce greenhouse gas (GHG) emissions while generating electricity for California consumers.

Stanton would improve the efficiency of existing system resources and contribute to a reduction of system wide GHG emissions from the Western U.S. electricity sector in several ways:

- When dispatched,[4] Stanton would displace less efficient (and thus higher GHG-emitting) generation. Because the project's GHG emissions per megawatt-hour (MWh) would be lower than those power plants that the project would displace, the addition of Stanton would contribute to a reduction of Western Electricity Coordinating Council system GHG[5] emissions overall and the GHG emission rate average.
- Stanton would provide fast start and dispatch flexibility capabilities necessary to integrate expected and desired additional amounts of variable renewable generation (also known as "intermittent" energy resources) to meet the state's renewable portfolio standard (RPS) and GHG emission reduction targets.
- Stanton would replace less efficient generation in the South Coast local reliability area required to meet local reliability needs, reducing the GHG emissions associated with providing local reliability services and facilitating the retirement of aging, high GHG-emitting resources in the area.

INTRODUCTION

Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). GHG emissions are not criteria pollutants with direct impacts; they are discussed in the context of cumulative impacts. In December 2009, the U.S. Environmental Protection Agency (U.S. EPA) declared that greenhouse gases (GHGs) threaten the public health and welfare of the current and future generations (the "endangerment finding"). This finding became effective on January 14, 2010.

[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.

[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.

The generation of electricity using any fossil fuel, including natural gas, can produce GHGs along with the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts (CAA). For fossil fuel-fired power plants, GHG emissions include primarily CO_2, with much smaller amounts of nitrous oxide (N_2O, not NO or NO_2 which are commonly known as NOx or oxides of nitrogen), and methane (CH_4 – often from unburned natural gas). Also included are sulfur hexafluoride (SF_6) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels. Other sources of GHG emissions are small and more easily controlled, reused or recycled. These sources of GHG are included in the analysis because some of the compounds have very high relative global warming potentials[6].

The state has demonstrated a clear willingness to address global climate change though research, adaptation,[7] and GHG inventory reductions. In that context, staff evaluates GHG emissions from the proposed project, presents information on GHG emissions related to electricity generation, and describes the applicable GHG standards and requirements.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

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 each of these requirements. Additional analysis of Stanton's compliance with these LORS is included in the **Compliance with LORS** section.

[6] Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO_2e) for ease of comparison.

[7] While working to understand and reverse global climate change, it is prudent to also adapt to potential changes in the state's climate (for example, changing rainfall patterns).

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

Applicable LORS	Description	Stanton Consistency
Federal		
40 Code of Federal Regulations (CFR) Parts 51 and 52	A new stationary source that emits more than 100,000 TPY of greenhouse gases (GHGs) is also considered to be a major stationary source subject to PSD requirements. As of June 23, 2014 the US Supreme Court has invalidated this requirement as a sole PSD permitting trigger. However, for permits issued on or after July 1, 2011 PSD applies to GHGs if the source is otherwise subject to PSD (for another regulated NSR pollutant) and the source has a GHG potential to emit (PTE) equal to or greater than 75,000 TPY CO_2e.	**Consistent:** Stanton is not subject to the PSD analysis for other NSR pollutants and is therefore not subject to GHG PSD analysis.
40 Code of Federal Regulations (CFR) Parts 60, Subpart TTTT (Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units)	On October 23, 2015, U.S. EPA published new source performance standards (NSPS) for greenhouse gas emissions for new, modified, and reconstructed fossil fuel-fired electric utility generating units. Stanton turbines would be subject to these requirements.	**Consistent:** The turbines are limited to burning natural gas resulting in a consistent emission rate of 120 lb-CO_2/MMBTU or less.
40 Code of Federal Regulations (CFR) Part 98	This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2 equivalent emissions per year. This requirement is triggered by this facility.	**Consistent:** The facility owner will submit each GHG report and certificate of representation 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.)	This act requires the California Air Resource Board (ARB) to enact standards to reduce GHG emission to 1990 levels by 2020. Electricity production facilities are included. A cap-and-trade program became active in January 2012, with enforcement beginning in January 2013. Cap-and-trade is expected to achieve approximately 20 percent of the GHG reductions expected under AB 32 by 2020.	**Consistent:** Stanton 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.

Applicable LORS	Description	Stanton Consistency
Title 20, California Code of Regulations, Section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009	The regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 $MTCO_2$/MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lbs CO_2/MWh).	**Consistent:** Stanton would not be a base load facility so this regulation would not apply.
Local		
Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases, Gas Turbines	This rule establishes preconstruction review requirements for greenhouse gases (GHG). This rule is consistent with federal PSD rule as defined in 40 CFR Part 52.21. This rule requires the owner or operator of a new major source or a major modification to obtain a PSD permit prior to commencing construction.	**Consistent:** Stanton is not subject to GHG PSD analysis.

GHG ANALYSIS

California is actively pursuing policies to reduce GHG emissions that include adding low-GHG emitting renewable electricity generation resources to the system. Since the impact of the GHG emissions from a power plant's operation has global rather than local effects, those impacts are assessed not only by analysis of the plant's emissions, but also in the context of operation of the entire electricity system of which the plant would be an integrated part. Furthermore, the impact of the GHG emissions from a power plant's operation should be analyzed in the context of applicable GHG laws and policies, especially Assembly Bill (AB) 32, California's Global Warming Solutions Act of 2006.

GLOBAL CLIMATE CHANGE AND CALIFORNIA

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

GHGs differ from criteria pollutants in that GHG emissions from a specific project do not cause direct adverse localized human health effects. Rather, the direct environmental effect of GHG emissions is the cumulative effect of an overall increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. The impacts of climate change include potential physical, economic and social effects. These effects could include inundation of settled areas near the coast from rises in sea level associated with melting of land-based glacial ice sheets, exposure to more frequent and powerful climate events, and changes in suitability of certain areas for agriculture, reduction in Arctic sea ice, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, earlier flowering of trees, and a substantial reduction in winter snowpack

(IPCC 2007b). For example, current estimates include a 70 to 90 percent reduction in snow pack in the Sierra Nevada mountain range. Current data suggests that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods.

Earth's global surface temperatures in 2017 ranked as the second warmest since 1880, according to scientists at NASA's Goddard Institute for Space Studies (GISS) in New York. Continuing the planet's long-term warming trend, globally averaged temperatures in 2017 were 1.62 degrees Fahrenheit (0.90 degrees Celsius) warmer than the 1951 to 1980 mean (NASA/Goddard 2016). That is second only to global temperatures in 2016[8]. According to "The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California," an Energy Commission document, the American West is heating up faster than other regions of the United States (CEC 2009c). The California Climate Change Center (CCCC) reports that, by the end of this century, average global surface temperatures could rise by 4.7°F to 10.5°F due to increased GHG emissions.

Recent data collected at Mauna Loa, Hawaii indicate that the atmospheric CO_2 concentration now exceeds 400 ppm all year, and recent research suggests that values will remain above this level (Betts et al 2016). According to the latest information available from the Intergovernmental Panel on Climate Change in their document "Climate Change 2014" (IPCC 2016), atmospheric CO_2 concentrations of 430 to 480 ppm would be expected to cause an approximate 2.7 degree Fahrenheit (F) temperature increase and CO_2 concentrations ranging from 580 ppm to 650 ppm are expected to cause an approximate 3.6 F temperature increase.

In April 2007, the U.S. Supreme Court held that GHG emissions are pollutants within the meaning of the Clean Air Act (CAA). In reaching its decision, the Court also acknowledged that climate change results, in part, from anthropogenic causes (Massachusetts et al. v. Environmental Protection Agency 549 U.S. 497, 2007). The Supreme Court's ruling paved the way for the regulation of GHG emissions by U.S. Environmental Protection Agency (U.S. EPA) under the CAA.

In response to this Supreme Court decision, on December 7, 2009 the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- Endangerment Finding: That the current and projected concentrations of the GHGs in the atmosphere threaten the public health and welfare of current and future generations; and
- Cause or Contribute Finding: That the combined emissions of GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

[8] https://climate.nasa.gov/news/2671/long-term-warming-trend-continued-in-2017-nasa-noaa/

As of June 23, 2014, the U.S. Supreme Court has validated that GHG emissions should continue to be regulated, but only for those facilities that are already regulated under Prevention of Significant Deterioration (PSD) for New Source Review (NSR) pollutants.

On October 23, 2015, the U.S. EPA published in the Federal Register a New Source Performance Standard (NSPS) for GHG emissions for new electric power plants with an immediate effective date. It sets standards to limit emissions of CO_2 from new, modified and reconstructed power plants. The New Source Performance Standards Subpart TTTT-Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units (Title 40, Code of Federal Regulations, Part 60.5508) are set under the authority of the Clean Air Act section 111(b) and are applicable to new fossil fuel-fired power plants commencing construction after January 8, 2014.

According to Subpart TTTT, base load rating is defined as maximum amount of heat input that an electric generating unit (EGU) can combust on a steady state basis at standard conditions (ISO conditions). For stationary combustion turbines, base load rating includes the heat input from duct burners. Each EGU is subject to the standard if it burns natural gas on a 12-month rolling basis more than 90% of the time and if the EGU supplies more than the design efficiency times the potential electric output as net-electric sales on a 3 year rolling average basis. Affected EGUs supplying equal to or less than the design efficiency times the potential electric output as net electric sales on a 3 year rolling average basis are considered non-base load units and are subject to a heat input limit of 120 lbs CO_2/MMBtu. Each affected 'base load' EGU is subject to the gross energy output standard of 1,000 lbs of CO_2/MWh unless the Administrator approves the EGU being subject to a net energy output standard of 1,030 lbs CO_2/MWh. Stanton simple cycle units would be subject to the 120 lb CO_2 per MMBtu limit and would be expected to comply by the use of natural gas.

SB 1368, enacted in 2006, and regulations adopted by the Energy Commission and the CPUC pursuant to that bill, prohibit California utilities from entering into long-term commitments with any base-load facilities that exceed the Emission Performance Standard (EPS) of 0.5 metric tonnes CO_2 per megawatt-hour (1,100 pounds CO_2/MWh). Specifically, the SB 1368 EPS applies to new California utility-owned power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California, where the power plants are "designed or intended" to operate as base load generation. If a project, in state or out of state, plans to sell electricity or capacity to California utilities, those utilities will have to demonstrate that the project meets the EPS. *Base load* units are defined as units that are expected to operate at a capacity factor 60 percent or higher. Compliance with the EPS is determined by dividing the annual average carbon dioxide emissions by the annual average net electricity production in MWh. This determination is based on capacity factors, heat rates, and corresponding emissions rates that reflect the *expected* operations of the power plant and not on full load heat rates [Chapter 11, Article 1 §2903(a)].

Stanton would be required to participate in California's GHG cap-and-trade program. This cap-and-trade program is part of a broad effort by the state of California to reduce GHG emissions as required by AB 32, which is being implemented by ARB. As currently implemented, market participants such as Stanton are required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. As new participants enter the market and as the market cap is ratcheted down over time, GHG emission allowance and offset prices will increase, encouraging innovation by market participants to reduce their GHG emissions. Thus, Stanton, as a GHG cap-and-trade participant, would be consistent with California's AB 32 Program.

On May 22, 2014, the Air Resources Board (ARB) released its first update to their AB32 Scoping Plan. On April 29, 2015, Governor Brown issued Executive Order B-30-15, directing state agencies to implement measures to reduce GHG emissions 40 percent below their 1990 levels by 2030 and to achieve the previously-stated goal of an 80 percent GHG reduction by 2050. In response, ARB is again updating the AB32 Scoping Plan. If this project is built after 2020, the GHG regulatory landscape could be different than today.

On June 17, 2016, ARB released a concept paper addressing four options for updating the Scoping Plan that focus on extending AB32 requirements beyond the year 2020. There are four alternatives listed in the concept paper, described as Concepts 1 to 4. These are summarized as follows:

1. Extending cap-and-trade and other complementary programs,

2. Expand complementary programs without extending cap-and-trade,

3. Aggressively expand transportation-related programs and other complementary programs without extending cap and trade, and

4. Replace cap-and-trade with a carbon tax and expanded complementary programs.

Staff's GHG analysis assumes the cap-and-trade provisions of AB32 would continue as envisioned in Concept 1. If a carbon tax replaces cap-and-trade as envisioned in Concept 4, the effect on Stanton is expected to be approximately the same, depending on how the carbon tax is levied. However, if the cap-and-trade approach is abandoned as in Concepts 2 and 3, the only programmatic approach currently in place would apply to reducing GHG emissions from power plants would be the federal New Source Performance Standard requirements being developed by the U.S. EPA. As currently proposed, Stanton would comply with these federal GHG requirements.

On September 8, 2016, Senate Bill 32, codified as Section 38566 of the Health and Safety Code, was enacted. It extends California's commitment to reduce GHG emissions by requiring the state to reduce statewide emissions to below 1990 levels by 2030.

ELECTRICITY SYSTEM GREENHOUSE GAS EMISSIONS

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

GHG EMISSIONS FROM THE PROPOSED FACILITY

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. The applicant provided an annual GHG emission estimate for the construction phase. The GHG emissions estimate is presented below in Greenhouse Gas Table 2. The term CO_2e represents the total GHG emissions after weighting by the appropriate global warming potential.

Greenhouse Gas Table 2
Estimated Maximum Annual Construction Greenhouse Gas Emissions

Stanton	MTCO2e/yr
On-Site Construction Total	764
Off-Site Construction Total	2,019

Source: SERC 2016a, SERC 2018g and independent staff analysis

Project Operations

The primary sources of GHG during operation of Stanton would be the natural gas fired combustion turbines. The employee and delivery traffic GHG emissions from off-site activities are negligible in comparison with the gas turbine GHG emissions.

Greenhouse Gas Table 3 shows estimated GHG emissions for Stanton on an annual basis assuming the facility would operate at maximum permitted emissions levels. All emissions are converted to CO_2-equivalent and totaled. Electricity generation GHG emissions are generally dominated by CO_2 emissions from the carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials.

Based on the maximum permitted annual emission levels, the annual capacity factor is estimated to be 10.3% (902 hour/8,760 hour). Therefore, Stanton is a non-base load unit and is subject to a heat input limit of 120 lbs CO_2/MMBtu. As Stanton is natural-gas fired only, the turbines are expected to emit CO_2 at a rate at 117 lb CO_2/MMBtu, thereby complying with the 120 lb CO_2/MMBtu standard. Stanton would not be subject to SB 1368 Greenhouse Gas Emission Performance Standard of 0.500 $MTCO_2$/MWh, which only applies to baseload facilities with capacity factors above 60 percent.

Greenhouse Gas Table 3
Estimated Potential Annual Greenhouse Gas (GHG) Emissions

Stanton	Operational GHG Emissions ($MTCO_2e$/yr)[a]
Carbon Dioxide (CO_2)	49,483.68
Sulfur Hexafluoride (SF_6) Leakage	2.57
Total Project GHG Emissions ($MTCO_2e$/yr)	**49,486.25**
Estimated Annual Energy Output (MWh/yr)[b]	859,37
Estimated Annualized GHG Performance ($MTCO_2$/MWh)	**0.58**

Source: SERC 2017b, SCAQMD 2018g and staff analysis
Notes: [a] One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
[b.] Annualized basis uses the project owner's assumed maximum permitted operating basis.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses the cumulative effects of GHG emissions caused by both construction and operation. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation.

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The CEQA guidelines provide three factors for lead agencies to consider when assessing the significance of impacts for the analysis of GHG emissions impacts (CEQA Guidelines, tit. 14, §15064.4).

- *The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;*
- *Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and*
- *The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.*

Staff evaluates the emissions of the project in the context of the electricity sector as a whole and the AB 32 Scoping Plan implementation efforts for the sector, including the cap and trade regulation that constitutes the state's primary mechanism for reducing GHG emissions from the electricity sector. The Energy Commission's assessment approach does not include a specific numeric threshold of significance for GHG emissions; rather the assessment is completed in the context of how the project will affect the electricity sector's emissions based on its proposed role and its compliance with applicable regulations and policies.

Included in this sector-wide GHG emission analysis method is the determination of whether a project is consistent with the Avenal precedent decision, which requires a finding as a conclusion of law that any new natural gas-fired power plant certified by the Energy Commission "must:

- *not increase the overall system heat rate for natural gas plants;*
- *not interfere with generation from existing renewables or with the integration of new renewable generation; and*
- *taking into account the two preceding factors, reduce system-wide GHG emissions."*[9]

CONSTRUCTION EMISSIONS

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

DIRECT/INDIRECT OPERATION IMPACTS AND MITIGATION

Operational impacts of the proposed project are described in detail in a later section titled "**Net GHG Emission Impact of Stanton 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, GHG emissions impacts arising from operation are mitigated through compliance with the State's cap and trade regulation, which is designed to reduce electricity sector GHG emissions over time in order to meet AB 32 statewide GHG emissions reduction goals.

[9] Final Commission Decision, Avenal Energy Application for Certification (08-AFC-1) December 2009, p. 114.

CUMULATIVE IMPACTS

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

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

COMPLIANCE WITH LORS

Stanton would be required to participate in California’s GHG cap-and-trade program, which became active in January 2012, with enforcement beginning in January 2013. This cap-and-trade program is part of a broad effort by the state of California to reduce GHG emissions as required by AB 32, which is being implemented by ARB. As currently implemented, market participants such as Stanton are required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Stanton, 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. 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 proposed Stanton is a simple-cycle power plant and subject to the limit of 120-lb CO_2 per MMBtu of heat input. Compliance with this standard is expected.

CONCLUSIONS AND RECOMMENDATIONS

Stanton would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, staff concludes that Stanton would result in a cumulative overall reduction in GHG emissions from the state’s power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. In addition, it would provide flexible, dispatchable and fast-ramping power in relatively small increments of capacity, which should improve the electric system reliability in a high-renewables, low-GHG system.

Stanton would be subject to mandatory reporting of GHG emissions per federal government and California Air Resources Board (CARB) greenhouse gas regulations. These reports enable these agencies to gather information needed to regulate Stanton in trading markets, such as those that are required by regulations implementing the California Global Warming Solutions Act of 2006 (AB 32). In addition, Stanton may be subject to additional reporting requirements and GHG reduction and trading requirements as these regulations continue to evolve.

GHG emissions increases from construction activities would be mitigated. Construction emissions would be temporary and intermittent, and not continue during the life of the project. 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 believes that the use of newer equipment would reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that would likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment.

As a non-base load facility, Stanton would comply with the 120-lb CO_2/MMBtu standard by the use of natural gas only.

Staff has reached the following conclusions about Stanton based on CEQA guidelines:

- Stanton would have less than significant GHG emissions impacts because:
    - The proposed simple-cycle turbines of Stanton would have lower heat rates and lower GHG emissions than those of the existing peaking facilities in the local capacity area (LCA). It would also be dispatched in lieu of less efficient, higher-emitting combined cycles when providing local reliability services.
    - Stanton would facilitate the integration of renewable energy resources that would lower the state-wide GHG emissions from the electricity sector.
- Stanton would have less than significant impacts by complying with applicable regulations and plans related to the reduction of GHG emissions as follows:
    - Stanton 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;
    - The construction emissions mitigation measures that staff recommends to address criteria pollutant emissions would further minimize GHG emissions. The use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of future ARB regulations to reduce GHG from construction vehicles and equipment.

Stanton would be consistent with all three main conditions in the Energy Commission's 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).

PROPOSED CONDITIONS OF CERTIFICATION

Conditions of Certification **AQ-E4** in the Air Quality section relate to the greenhouse gas emissions from project operation and are proposed here by reference. The facility owner would participate in California's GHG cap-and-trade program, and is required to report GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions, by purchasing allowances from the capped market and offsets from outside the AB 32 program. Similarly, Stanton 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.

NET GHG EMISSIONS IMPACT OF STANTON 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.[10] The GHG emissions produced by Stanton (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 lower renewable penetration levels, output from new natural gas-fired generation facilities such as Stanton displaces output from existing generators[11] in a very straightforward fashion. Natural gas-fired power plants are dispatched (called upon to generate electricity) by their owners or the balancing authority[12] whenever they are a cheaper source of energy and the ancillary services[13] provided than an alternative, i.e.,

[10] 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 hour for which the energy is stored. This is called the charge/discharge efficiency.

[11] 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.

[12] 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 13.

[13] 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.

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 Stanton 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.[14]

The operation of a (new) natural gas-fired generation facility, holding the portfolio of remaining generation resources constant,[15] 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) 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

[14] 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 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.

[15] 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.

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 efficient, the reduction in GHG emissions will be substantial; if only slightly less efficient resources are displaced, the reductions will be much smaller.[16]

ENERGY DISPLACEMENT AND LOCAL CAPACITY NEEDS

As new generation capacity in the California ISO-defined Western sub-area of the Los Angeles Basin (LA Basin) LRA, Stanton would provide local reliability services. The California ISO has determined in their *2022 Local Capacity Technical Analysis* that the LA Basin area needs 6,022 MW of local capacity; the Western sub-area requires 3,803 MW.[17] Stanton would contribute up to 100 MW of net local natural gas-fired capacity to these areas, an additional 20 MW and 10 MWh of battery support and up to 98 MW of synchronous support.

Local reliability requires generation (or injection from storage) 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.[18] 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 Stanton 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 two CTGs at Stanton each would be limited to a maximum of 902 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, Stanton 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

[16] 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.

[17] CA ISO, *2022 Local Capacity Technical Analysis: Final Report and Study Results*, May 3 ,2017, –pp. 52 and 56.

[18] 1-in-10 load conditions refer to a level of demand that is expected to be observed on only one day in ten years.

displace less-efficient resources, reducing GHG emissions resulting from relying on the latter.

Greenhouse Gas Table 4 illustrates the thermal efficiency of existing merchant peaking facilities in the LA Basin LRA and provides the expected thermal efficiency of the CTGs for Stanton for comparison. It should be noted that **Greenhouse Gas Table 3** shows values using the net MW capacity, while **Greenhouse Gas Table 4** shows Stanton values using the gross MW capacity, with existing facility performance based on actual data (net).

Greenhouse Gas Table 4
Heat Rates, Capacity Factors, and GHG Emissions Performance
for LA Basin Merchant Peaking Facilities, 2015 – 2016

Plant Name	Capacity (MW)	Output[a] (MWh)	Heat Rate[b] (Btu/kWh)	Capacity Factor	GHG Performance[c] ($MTCO_2$/MWh)
Century	46	2,630	14,901	0.3%	0.788
Drews – Agua Mansa	46	3,177	14,978	0.4%	0.792
Indigo 1	45	24,983	10,579	3.2%	0.560
Indigo 2	45	36,712	10,566	4.7%	0.559
Indigo 3	45	37,475	10,218	4.7%	0.541
Long Beach 1	65	11,960	16,766	1.0%	0.887
Long Beach 2	65	12,031	16,461	1.1%	0.871
Long Beach 3	65	10,765	16,693	0.9%	0.883
Long Beach 4	65	10,775	16,874	0.9%	0.893
Total	486	150,509	12,504	1.8%	0.661
Stanton CTG Estimates	98		9,882		0.58

Source: Energy Commission QFER Database (CEC 2015); SERC 2016a.
Notes:
a. Gross output, MWh at ISO conditions.
b. Based on the Higher Heating Value or HHV of the fuel.
c. GHG performance conversion factor for natural gas of 0.529 $MTCO_2$/MW/10,000 Btu/KWh was used to derive these performance values.

While the net heat rates for each of Stanton 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 all of the existing simple-cycle combustion turbine resources in the LRA. Note, however, that the relative efficiencies of Stanton and the existing merchant natural gas-fired peaking resources in the LA Basin LRA do not drive the conclusion that Stanton, as a provider of local capacity needs, would result in lower GHG emissions. Were Stanton 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.

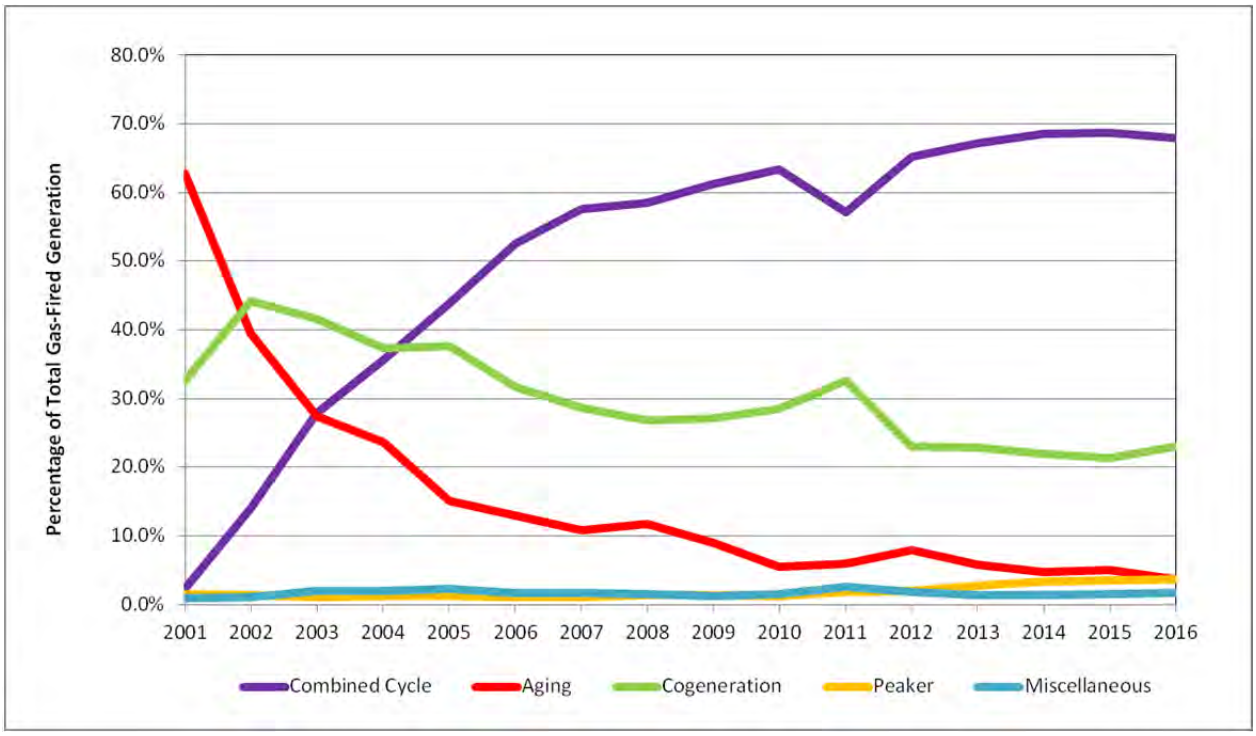
The long-run impact of the natural gas-fired fleet turnover as described here can be seen from historical changes in resources that are providing electricity in California as presented below in **Greenhouse Gas Figure 1**. In 2001, approximately 74,000 GWh (62.5 percent of natural gas-fired generation) 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).[19] 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[20] 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.

[19] The remaining 30 percent of natural gas-fired generation is largely cogeneration; slightly more than one percent is from peaking units. For a detailed discussion of the evolution of natural gas-fired generation in California since 2000, see *Thermal Efficiency of Gas-Fired Generation in California: 2014Update* (CEC-200-2013-005; September 2014).

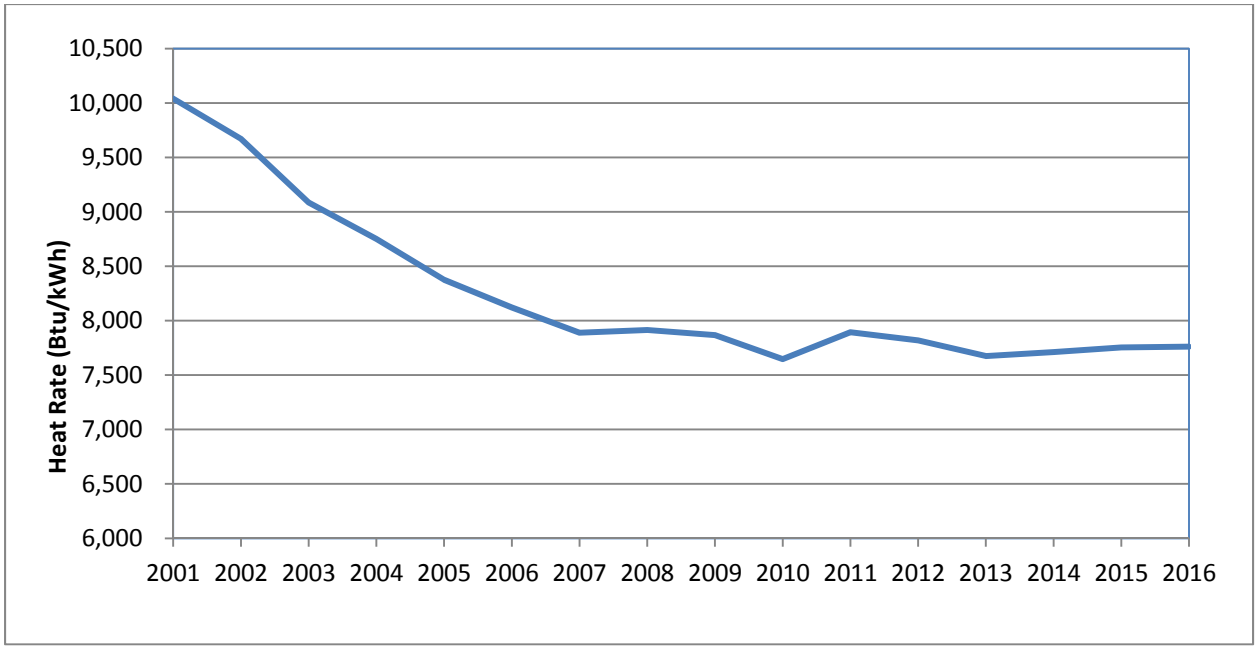
[20] A unit's capacity factor is its output expressed as a share of potential output, the amount it would generate if it were operated continuously at 100 percent of its maximum capacity for every hour of the year.

Greenhouse Gas Figure 1
Share of Total Natural Gas-Fired Generation in California, 2001 – 2016



Source: California Energy Commission, Quarterly Fuel and Energy Reporting.

Greenhouse Gas Figure 2
Average Heat Rates for Gas Fired Electric Generation Serving California

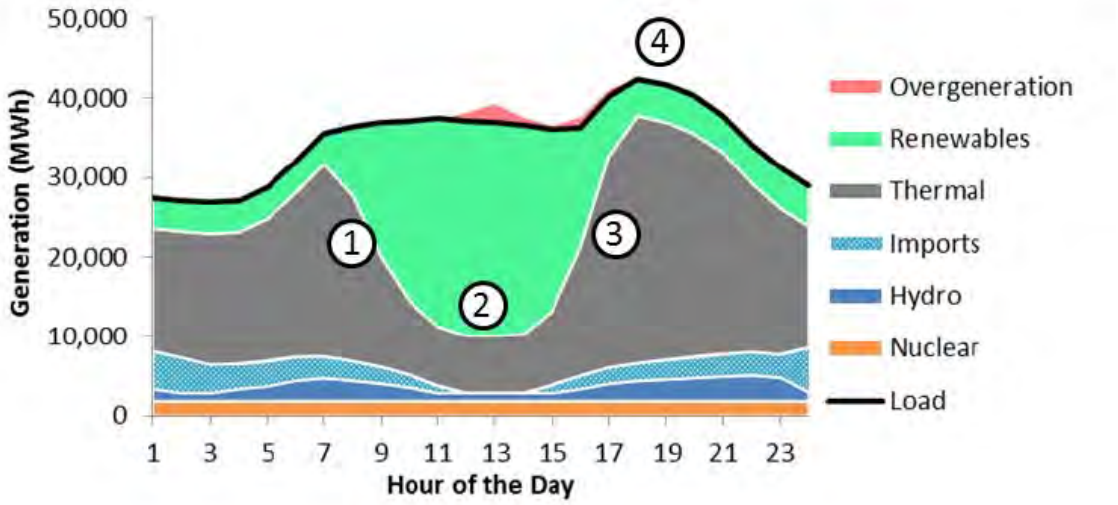


Source: Thermal Efficiency of Gas-Fired Generation in California: 2017 Update, CEC-200-2018-001, January 2018.

NEW NATURAL GAS PLANTS AND RENEWABLE INTEGRATION

At higher levels of renewable energy penetration, relatively efficient fast-start, fast-ramping resources such as Stanton 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 12 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 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, 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 (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.

NEW NATURAL GAS PLANTS AND STORAGE

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.

Electricity storage, such as the 20 MW battery portion of Stanton, could absorb renewable generation that might otherwise be curtailed by recharging the battery during hours in which a surplus of solar energy exists, and discharging it during hours in which natural gas-fired generation would otherwise be needed.

Even if the battery portion of Stanton is recharged using natural gas-fired generation, its use would be expected to reduce GHG emissions. Recharging would take place when wholesale prices for the energy needed to recharge the battery are lowest, i.e., when (marginal) natural gas-fired generation is most efficient and lowest-emitting. The latter is facilitated by developing natural gas-fired resources such as Stanton that can cycle on and off at least twice a day.[21]

[21] 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.

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ACRONYMS

AB	Assembly Bill
ARB	California Air Resources Board
CAA	Clean Air Act
CalEPA	California Environmental Protection Agency
California ISO	California Independent System Operator
CCCC	California Climate Change Center
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report
EPS	Emission Performance Standard
FDOC	Final Determination Of Compliance
FSA	Final Staff Assessment (this document)
GCC	Global Climate Change
GHG	Greenhouse Gas
GWh	Gigawatt-hour
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
HSC	Health and Safety Code
IEPR	Integrated Energy Policy Report
IPCC	Intergovernmental Panel on Climate Change
LCA	Local Capacity Area
LTPP	Long-term Procurement Planning
MT	Metric tones
$MTCO_2e$	Metric Tons of CO_2-Equivalent
MW	Megawatts
MWh	Megawatt-hour
N_2O	Nitrous Oxide
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen or Nitrogen Oxides

NSPS	New Source Performance Standard
OTC	Once-Through Cooling
PDOC	Preliminary Determination Of Compliance
PFC	Perfluorocarbons
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
RPS	Renewables Portfolio Standard
SB	Senate Bill
SF_6	Sulfur hexafluoride
SWRCB	State Water Resource Control Board
U.S. EPA	United States Environmental Protection Agency
WCI	Western Climate Initiative

BIOLOGICAL RESOURCES

Testimony of Ann Crisp and Tia Mia Taylor

SUMMARY OF CONCLUSIONS

The proposed Stanton Energy Reliability Center (Stanton or project) site and offsite linear facilities as well as temporary staging and parking areas would be located in areas that have been previously disturbed and are currently either developed or undeveloped with vegetation limited to weedy species and landscaping. Rare plants and special-status wildlife are not expected to occur on site, along the linear facility routes, or in temporary staging and parking areas; however, ruderal (disturbed) areas on site and nearby support common bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code (Sections 3503 and 3513). In addition, the proposed project site and the offsite natural gas line route are both bisected by storm channels under the jurisdiction of United States Army Corps of Engineers (USACE), Regional Water Quality Control Board, and California Department of Fish and Wildlife (CDFW).

Given the proximity of the proposed project to the aforementioned biological resources, construction and associated site clearance as well as operation of the proposed project could result in various direct and indirect effects. Staff concludes that with implementation of proposed conditions of certification, compliance with all applicable laws, ordinances, regulations, and standards (LORS) would be achieved and direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less than significant levels. Refer to **Biological Resources Table 3** for a summary of the proposed project's consistency with LORS and refer to **Biological Resources Table 4** for a summary of the proposed project's impacts, applicable conditions of certification, and determination of significance.

INTRODUCTION

This section of the Final Staff Assessment (FSA) provides the California Energy Commission staff's analysis of potential impacts to biological resources from the construction and operation of the proposed Stanton Energy Reliability Center (Stanton) project.

This analysis addresses potential impacts to special-status species, wetlands and other waters of the United States (U.S.), 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, specifies mitigation measures (conditions of certification) to reduce impacts to less than significant levels. Additionally, this analysis assesses the project's compliance with all applicable biological resources-related LORS.

This analysis is based, in part, on information provided in the Stanton Energy Reliability Center Application for Certification (AFC), Vol. 1 and Vol. 2 (SERC 2016a; SERC 2016b), responses to staff data requests (SERC 2017b), staff's observations during site visits of the proposed Stanton site on April 17 and June 23, 2017; and ongoing communications with staff at the city of Stanton, CDFW, U.S. Fish and Wildlife Service (USFWS), and USACE.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The project owner must comply with the LORS listed in **Biological Resources Table 1** during project site clearance, construction, operation, and closure.

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

Applicable LORS	Description
Federal	
Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Take of federally listed species as defined in the Act is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or Section 10 Habitat Conservation Plan. The administering agencies are the USFWS and National Marine Fisheries Service.
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into Waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants.
Migratory Bird Treaty Act (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 USFWS.
State	
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species. The administering agency is CDFW.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered. The administering agency is CDFW.
Fully Protected Species (Fish and Game Code sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also Title 14, California Code of Regulations, section 670.7). The administering agency is CDFW.
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. The administering agency is CDFW.

Applicable LORS	Description
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.
Local	
County of Orange General Plan	The Resources Element of the General Plan contains Orange County's policies on the conservation and management of resources. The principal natural resources of concern are vegetation and wildlife habitat, including oak woodlands, landforms, and coastal resources. It identifies and addresses concerns about the county's natural resources (land, air, water and plant and animal species). It contains policies and programs designed to protect and conserve these areas and provides decision making guidelines for advancing development, maintaining, preserving and conserving these resources. It includes a discussion of Orange County's Central-Coastal Natural Community Conservation Plan (NCCP)/ Habitat Conservation Plan (HCP) approved in 1996.

SETTING

PROJECT SITE AND VICINITY

The Stanton project site is located along the west side of Dale Avenue with secondary access to the site from the west via the corner of Pacific Street and Fern Avenue. The proposed project site is bounded on the north by light industrial facilities and overhead electrical transmission lines, including Southern California Edison's (SCE) Barre-Ellis 220-kilovolt (kV) line; on the east by the SCE Barre Substation, Barre Peaker Unit, overhead electrical transmission lines, and residential areas; on the south by Union Pacific Railroad (UPRR) right-of-way and a storage facility; and on the west by light industrial facilities and residential areas.

The proposed project site consists of two parcels totaling approximately 4 acres. Parcel 1 is previously disturbed and currently undeveloped land covered in ruderal vegetation (1.764 acres) and Parcel 2 is currently developed and used for vehicle and pallet storage with both paved and unpaved, graveled areas (2.214 acres). The two parcels are bisected by the Stanton Storm Channel which is a concrete-lined drainage channel and part of Orange County's Bolsa Chica drainage system that drains into the Pacific Ocean at Huntington Harbour (SERC 2016a).

New offsite linear facilities would be required for connections to the existing natural gas supply network and electrical grid. Natural gas would be delivered to the project via a 2.75-mile-long pipeline extending north along Dale Avenue to La Palma Avenue. The natural gas pipeline would be via either a 12-inch or 16-inch diameter connection. Electricity would be transmitted to the regional electrical grid via a new approximately 0.35-mile, 66-kV underground generator tie-line (or underground transmission line) that would run from the Stanton site to SCE's 66-kV Barre Substation (SERC 2016a). No new transmission poles would need to be constructed.

The Stanton project would be supplied potable water and process (demineralized potable) water from Golden State Water Company via existing water supply pipelines from connections on the east to Dale Avenue and/or on the west to Pacific Street. Since the project site would be unstaffed, domestic or sanitary water would not be required for the project. Storm water from both parcels would be discharged into the Stanton Storm Channel. Wastewater from infrequent combustion turbine water washes would be collected in holding tanks (one for each combustion turbine generator) and would be hauled away by a licensed waste hauler (SERC 2016a).

Construction worker parking for the Stanton project would occupy approximately 0.7 acres at the Bethel Romanian Pentecostal Church, located approximately 350 feet south of the site. Parcel 2 of the site would function as a construction laydown area during the first phase of construction at Parcel 1 and would also be used for equipment staging, material storage, worker parking, and temporary administrative buildings (SERC 2016a). In addition, SoCalGas has identified two possible offsite laydown yards to be used during construction of the natural gas pipeline. Staging Area A and Staging Area B are both 0.50-acre vacant lots. Staging Area A adjoins Parcel 1 and Staging Area B is located within a currently inaccessible (fenced) parking lot, 2.08 miles north of Parcel 1 (SERC 2017b).

REGIONAL SETTING

The regional setting of the proposed project encompasses the area within 10 miles of the Stanton project site and within 10 miles of the offsite linear facilities and associated construction parking and staging areas. The proposed project site lies within the Los Angeles Plain subsection of the Southern California Coast Section, which is characterized by nearly level floodplains and terraces to gently sloping alluvial fans with small areas of marine terraces (USDA 1997). Land use proximate to the proposed project area primarily includes light industrial areas, electricity generation and transmission facilities, and residential development. Further from the proposed site, land uses also include commercial development, scattered parks and recreational facilities, and small strips of open space. Native habitats no longer exist in the project vicinity due to development of commercial, industrial, and residential areas as the city of Stanton has urbanized from historical ranch land (COS 2017a).

The Santa Ana River (channelized) is located approximately 6 miles east of the project site. The site is located on a relatively flat coastal plain of the Los Angeles Basin (SERC 2106a). Extensive urban and industrial development throughout the region has replaced most of the natural communities which are restricted to scattered open space preserves and other protected areas.

Significant Ecological Areas and Other Protected Areas

Several important ecological reserves, wetland preservation sites, and designated open spaces occur in the region. These protected areas represent some of the best remaining native habitat in the region and provide important habitat for migratory birds along the Pacific Flyway as well as habitat for several special-status plants and animals. Following is a brief description of each of these areas (excerpted from SERC 2016a and verified by staff).

Bolsa Chica Ecological Reserve

The Bolsa Chica Ecological Reserve is approximately 8 miles southeast of the proposed Stanton project site. The reserve includes a mixture of salt marsh and open mudflats as well as open water with tidal flows controlled by flood gates. The reserve encompasses approximately 1,400 acres and provides significant stopover and wintering habitat for migratory birds as they move through the region, as well as habitat for native fish, wildlife, and plants (Bolsa Chica Conservancy 2017). Over 200 species of birds have been documented to occur at these wetlands including 32 special-status birds such as the Ridgway's rail (*Rallus longirostris levipes*; previously known as light-footed clapper rail), California least tern (*Sternula antillarum browni*), Belding's savanna sparrow (*Passerculus sandwichensis beldingi*), and western snowy plover (*Charadrius alexandrinus nivosus*). Several special-status plants, amphibians, reptiles, and mammals are also known to occur in this area including southern tarplant (*Centromadia parryi ssp. australis;* CRPR 1B.1), Coulter's goldfields (*Lasthenia glabrata ssp. coulteri:* CRPR 1B.1), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), western pond turtle (*Emys marmorata*), silvery legless lizard (*Anniella pulchra*) and the southern California salt marsh shrew (*Sorex ornatus salicornicus*).

Fairview Park

Fairview Park is approximately 10 miles southeast from the proposed project site. Fairview park comprises 208 acres of open space consisting of vernal pools, trails, native plant communities, and wildlife. Plant communities consist of various scrub habitats like coastal sage scrub, native grasslands, and ruderal vegetation. The Fairview Park Wetlands and Riparian Habitat Project, started in 2007 and partially funded by USACE and the California Department of Parks and Recreation, restored 17 acres of riparian habitat and 6 acres of wetlands to be protected in perpetuity as open space. Special-status plant and animal species detected during surveys conducted prior to restoration activities include southern tarplant, chaparral sand-verbena (*Abronia villosa var. aurita*), cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), burrowing owl (*Athene cunicularia*), coastal California gnatcatcher (*Polioptila californica californica*), and yellow-breasted chat (*Icteria virens*) (Costa Mesa 2017).

Huntington Beach Wetlands

The Huntington Beach Wetlands Conservancy is located approximately 10 miles south of the proposed project site. The Huntington Beach Wetlands Conservancy has been actively restoring coastal wetland habitats along the Talbert Channel and Huntington Beach Channel since 1989. The wetland restoration in this area includes four units: Newland Marsh, Magnolia Marsh (including Upper Magnolia Marsh), Brookhurst Marsh, and Talbert Marsh. Collectively these areas encompass approximately 180 acres. Primary habitats include coastal salt marsh, open water, and salt panne. Restoration of these areas began with the removal of the seaward levee of the Huntington Beach Flood Control Channel to restore tidal influence into the Talbert and Brookhurst Marshes. Restoration of the Magnolia Marsh site began in April 2009 and involved excavation of 40,000 cubic yards of fill to re-create historical tidal channels. The restoration work in Magnolia Marsh was completed in February 2010.

Several special-status wildlife species have been reported or observed in these wetlands. The wetlands support a breeding population of Belding's savanna sparrows, a state listed endangered species. Ridgway's rail has recently been documented breeding in the Brookhurst Marsh in the immediate vicinity of the Huntington Beach Energy Project site (Zembal and Hoffman 2012). It also breeds at the Santa Ana River Marsh at the southeastern end of the Huntington Beach Wetlands complex (CDFW 2017a). The wetland complex provides foraging habitat for other endangered bird species including the western snowy plover and the California least tern (Merkel & Associates 2004). Other special-status wildlife species observed utilizing the area include California brown pelican (*Pelecanus occidentalis*; foraging only) and the salt marsh skipper (*Panoquina errans*).

Huntington State Beach

Huntington State Beach is located approximately 10 miles south of the proposed Stanton project site. Huntington State Beach is a recreational beach located on the Pacific coast in the city of Huntington Beach which is heavily impacted by anthropogenic activity. A small section of Huntington State Beach, known as Huntington State Beach Least Tern Natural Preserve, is closed to the public as it is known breeding habitat for California least tern and snowy plover. The preserve is approximately 13 acres and is located between Talbert Channel and the Santa Ana River Channel on the southern end of Huntington State Beach (SSAS 2016).

Peter F. Schabarum Regional County Park

Peter F. Schabarum Regional County Park is located approximately 10 miles northeast of the proposed project site. The park consists of 575 acres, 75 of which are developed for recreational uses while the remaining acres are undeveloped (DPR 2017). The undeveloped acres border Powder Canyon to the south and provide similar habitat as Puente Hills, described below, and therefore have the potential to support the same special-status species.

Puente Hills

Puente Hills is located approximately 10 miles north and northeast from the proposed project site. It is a collection of open space parcels purchased and maintained in perpetuity for the purpose of protecting the biological diversity of the land by the Puente Hills Habitat Preservation Authority (PHHPA). Currently, PHHPA owns 1,878 acres of open space which includes Worsham Canyon Open Space, Arroyo Pescadero, and Powder Canyon. Powder Canyon is currently undergoing restoration to promote native vegetation with the goal of creating 60 acres of native vegetation, a portion of which could support the coastal California gnatcatcher (Habitat Authority 2017). Puente Hills contains diverse vegetative communities such as coastal sage scrub, chaparral, native grassland, oak and walnut tree woodland, and riparian woodland that support many native plant and wildlife species and provide habitat for migratory bird species as they move through the region (Habitat Authority 2013).

Seal Beach National Wildlife Refuge

The Seal Beach National Wildlife Refuge is located approximately 7 miles southwest of the proposed Stanton project site within the boundaries of the Seal Beach Naval Weapons Station. The 965-acre refuge encompasses remnant saltwater marsh in the Anaheim Bay estuary. The refuge provides important habitat for a number of migratory birds as well as three endangered species including the Ridgway's rail, California least tern, and Belding’s savanna sparrow.

Talbert Nature Preserve

The Talbert Nature Preserve is a 185-acre parcel in Costa Mesa along the east side of the Santa Ana River approximately 10 miles south of the Stanton site. Natural communities in this preserve include coastal strand (dunes), native grassland, woodlands, and riparian woodland/scrub (OCP 2017). Special-status species known to occur in this area include southern tarplant and Davidson’s salt scale (*Atriplex serenana var. davidsonii;* CRPR 1B.2).

Critical Habitat

Critical habitat is a formal designation defined in section 3 of the federal 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 the following federally listed species occurs in the regional vicinity of the proposed Stanton project.

San Diego Fairy Shrimp (*Branchinecta sandiegonensis)*

An area known as Subunit 1B was reviewed for, but excluded from, the designation of final critical habitat for San Diego fairy shrimp by the USFWS because it was sufficiently protected within the Fairview Park Master Plan. However, it is still considered essential for the preservation and survival of the species. Subunit 1B is found approximately 10 miles southeast of the proposed project site within Fairview Park a little over two miles inland from the Pacific Ocean. It consists of 45 acres of habitat that support features essential to the species including three vernal pools which are known to host the species currently. These pools are among the only vernal pools left in Orange County (USFWS 2007b). There are no vernal pools or suitable habitat for the species on the proposed Stanton site, offsite worker parking area, offsite staging areas, or along the linear facilities.

Coastal California Gnatcatcher (*Polioptila californica californica*)

Critical habitat for the coastal California gnatcatcher is located over 6 miles north (West Coyote Hills), 8 miles northeast (East Coyote Hills), and 10 miles north and northeast (Puente Hills) of the proposed project site. These areas collectively comprise a part of Unit 9 designated final critical habitat for the species, which covers an area of over 33,500 acres in Montebello, Chino-Puente Hills, East Coyote Hills, and West Coyote Hills (USFWS 2007a). There is no suitable habitat for coastal California gnatcatcher on the proposed Stanton site, offsite worker parking area, offsite staging areas, or along the linear facilities.

Western Snowy Plover (*Charadrius nivosus nivosus*)

The final rule for USFWS-designated critical habitat for western snowy plover was published on June 19, 2012 (USFWS 2012), and includes the Bolsa Chica State Beach and Bolsa Chica Ecological Reserve (BCER), which are located approximately 8 miles southwest of the proposed Stanton site. The beach habitats for western snowy plover within the designated critical habitat are generally characterized by large, flat, and open spaces which serve as potential breeding sites. Western snowy plover migrate to breed at the BCER during the summer (Bolsa Chica Conservancy 2017). There is no suitable habitat for the species on the proposed Stanton site, offsite worker parking area, offsite staging areas, or along the linear facilities.

EXISTING VEGETATION AND WILDLIFE

The applicant conducted various biological resource surveys as part of the AFC and in response to staff's data requests (SERC 2016a, SERC 2017b). Surveys were conducted by biologists and followed standard methods and recommendations from the relevant wildlife agencies for conducting biological resource surveys.

The applicant conducted a biological reconnaissance-level survey and rare plant survey within the proposed project site (i.e. Parcel 1 and Parcel 2) in August 2016. The survey area included the project site and suitable habitat for special-status wildlife and nesting birds within a 100-foot buffer, where access was permitted. The offsite worker parking area, linear facilities (i.e. generator tie-line and natural gas line), and offsite Staging Area A and Staging Area B were not surveyed in August 2016.

The applicant conducted supplemental biological reconnaissance surveys for special-status plants, special-status wildlife, and nesting birds with a focus on western burrowing owl in April 2017. The supplemental wildlife survey encompassed the Stanton project site and two additional staging areas not included in the AFC (i.e. offsite Staging Area A and Staging Area B), plus a 100-foot buffer where accessible. Staging Area A and Staging Area B would potentially be used by SoCalGas which would construct, own, and operate the new pipeline. The linear facilities (i.e. generator tie-line and natural gas line) and offsite worker parking area were not surveyed. The natural gas line occurs along a paved road in an entirely developed area so biological surveys are not required. However, as part of Data Request Set 1 staff requested the applicant conduct and submit the results of a land cover/vegetation community survey of the generator tie-line, which the applicant stated would be conducted by SCE (SERC 2017b). This survey report was submitted on August 30, 2017 and included the results of a desktop analysis, habitat assessment, and reconnaissance field survey conducted on August 10, 2017. The field surveys included a habitat assessment and reconnaissance survey for the alignment plus a 150-foot buffer (SERC 2017j).

In addition, as part of Data Response Set 2, the applicant provided additional information identifying the number and species of trees that would be removed or trimmed as part of the proposed Stanton project (SERC 2017i). As part of Data Request Response Set 3, the applicant provided additional information that staff requested to complete its analysis, which included the diameter at breast height (DBH) as measured at 4.5 feet above ground, height (visual estimate only, +/- 20 feet), and condition and overall health for all tree species to be trimmed or removed. Staff requested clarification on the changes in species identification between the initial identifications for Data Request Response #64 and noted corrections made to four of these identifications in response to Data Request #72. This additional information was provided by the applicant via email on October 5, 2017 (CEC 2017k).

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

Vegetation

The proposed Stanton site as well as the offsite staging areas, worker parking areas, and linear facilities are located in areas that are either disturbed and undeveloped, or are developed and paved or graveled. There are no natural habitats or wetlands within the project area, however a cement-lined storm channel bisects the Stanton project site. The project site is paved or graveled on the west side of the storm channel and is an unpaved, ruderal grassland on the east side of the channel that is regularly mowed for fire prevention. The paved and graveled areas on the west side of the site are currently used for vehicle and pallet storage. The ruderal grassland on the east side of the site also has some patches of graveled areas, as well. No vegetation was detected within the storm channel during surveys.

Species observed on site are primarily non-native and many are considered invasive by the California Invasive Plant Council (Cal-IPC) and included in the California Invasive Plant Inventory. Of the non-native (weed) plant species observed during surveys, two species, foxtail brome (*Bromus madritensis*) and yellow star thistle (*Centaurea solstitialis*), are ranked "High" by Cal-IPC which indicates a species that has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Non-native species are typical of ruderal habitats which occupy heavily disturbed areas that are characterized by a complete or almost complete absence of native plants (Frenkel 1970). At least one native species was detected on the project site during floristic surveys, California wild grape (*Vitis californica*). A second species, bindweed (*Calystegia* sp.) was identified as native during surveys; however, since it was not identified to species it is unknown if it is native or non-native.

The dominant species on the Stanton project site (Parcel 1 and Parcel 2) and offsite Staging Area A is ripgut brome (*Bromus diandrus*). Staging Area B was unmowed at the time of the surveys in April 2017 and its dominant species is foxtail brome (*Bromus madritensis).* Several tree species were identified by the applicant to be either removed or trimmed as part of the proposed project (SERC 2017i). This includes five non-native trees to be removed on Parcel 2 including a tree tobacco (*Nicotiana glauca*), white bladderflower (*Araujia sericifera*), winged sumac (*Rhus copallinum*), tree of heaven (*Ailanthus altissima*), and white mandevilla (*Mandevilla boliviensis*) (SERC 2017m). In addition, seven trees would be trimmed along the boundary of Parcel 2 including non-native tree tobacco, two coast coral trees (*Erythrina caffra*), Chinese elm (*Ulmus parvifolia*), Brazilian peppertree (*Schinus terebinthifolius*), carrotwood (*Cupaniopsis anacardioides*) and one native tree, western sycamore (*Platanus racemosa*). As clarified via email, three corrections were made to tree identifications between Data Request Response #A64 and #A72 which identified the three species as non-native which were originally noted as native species (CEC 2017K). The California black walnut (*Juglans californica*) was corrected to tree of heaven with some tree tobacco and winged sumac, the California mountain ash (*Sorbus californica*) was corrected to Brazilian pepper tree and the coast live oak was corrected to carrotwood.

The natural gas line route runs along city streets and is in a paved and developed area with no vegetation other than ornamental landscaping. The generator tie-line is primarily located within the SCE Barre Substation. Land cover types are described as either ruderal grasslands, non-native landscape fenceline border, and areas surfaced with gravel that are partially invaded with invasive and ruderal species based on the applicant's review of aerial photography (SERC 2017b). The applicant provided the results of a land cover/vegetation community survey within portions of the SCE Barre Substation property that are part of the Stanton project in Supplemental Response to Data Request A17 (SERC 2017j). Surveyors documented primarily disturbed land with relatively compacted soils and ruderal and ornamental vegetation within the survey area. The ruderal areas had been recently mowed at the time of surveys and the dominant species was yellow star thistle (SERC 2017j).

Within one mile of the proposed project site, offsite linear facilities, and offsite staging and worker parking areas the following vegetation communities and land cover types are present.

- **Urban.** Urban development represents the largest land cover type in the survey area. It includes residential, commercial, light industrial, public schools, care facilities, places of worship, and other civic facilities.
- **Industrial.** This land cover type includes the SCE Barre Substation and SCE Barre Peaker Unit, and overhead electrical transmission lines, industrial areas to the north and south, and the UPRR right-of-way.
- **Parks and recreational facilities.** Parks and recreational facilities include Harry M. Dotson Park, Hollenbeck Park, Zuniga Park, Stanton Park, Stanton Central Park, and Magnolia Park.

In addition, the following significant natural communities as identified by the CDFW's California Natural Diversity Database (CNDDB) are present within 10 miles of the project area (excerpted from SERC 2016a and verified by staff).

Southern Coastal Salt Marsh

Southern salt marsh is a highly productive alliance dominated by salt-tolerant species, and is similar to northern coastal salt marshes except it occurs in areas with warmer water and air temperatures (Holland, 1986). As described by Holland (1986), this alliance typically occurs along sheltered inland margins of bays, lagoons, and estuaries that are routinely inundated by tidal salt water for at least some part of each year. Species commonly found in southern salt marshes include Watson's saltbush (*Atriplex watsonii*), saltwort (*Batis maritima*), California boxthorn (*Lycium californicum*), shore grass (*Distichlis littoralis*), California seablite (*Suaeda californica*), and Parish's glasswort (*Salicornia subterminalis*) (Holland, 1986). This habitat is not found in the immediate vicinity of the proposed project site; however it is found from over 6 to 10 miles from the site within the Bolsa Chica Ecological Reserve, Huntington Beach Wetlands, USACE Bolsa Chica Wetlands Restoration Project, Seal Beach National Wildlife Refuge, and the Talbert Marsh (CDFW 2017a).

Southern Cottonwood Willow Riparian Forest

Southern cottonwood willow riparian forest is characterized by broadleaf winter-deciduous trees including cottonwoods (*Populus fremontii*; *P. trichocarpa*) and several types of willows including black willow (*Salix gooddingii*), sand bar willow (*Salix exigua*), Pacific willow (*Salix lasiandra*), and arroyo willow (*Salix lasiolepis*) (Holland 1986). Associated species include sycamore (*Platanus racemosa*), mugwort (*Artemisia douglasiana*), and coyotebrush (*Baccharis glutinosa*). This habitat is not found in the immediate vicinity of the proposed Stanton project site; however this sensitive habitat has historically occurred along the Santa Ana River greenbelt approximately 10 miles south of the proposed project site (CDFW 2017a). This community was extirpated by the channelization of the Santa Ana River (CDFW 2017a).

Southern Dune Scrub

Southern dune scrub is characterized as a dense coastal scrub community of scattered shrubs, subshrubs, and herbs often associated with a high percentage of cover where plants are somewhat shorter and often somewhat succulent compared to central dune scrub where plants are typically less than one meter tall (Holland 1986). This habitat type is drier, warmer, and experiences less onshore wind when compared to central and northern dune scrub habitats. Native plants commonly found in this habitat include beach saltbush (*Atriplex leucophylla*), California croton (*Croton californicus*), California ephedra (*Ephedra californica*), mock heather (*Ericameria ericoides*), dune lupine (*Lupinus chamissonis*), desert thorn (*Lycium brevipes*), prickly pear (*Opuntia littoralis*), lemonade berry (*Rhus integrifolia*), and jojoba (*Simmondsia chinensis*). This habitat is not found in the immediate vicinity of the proposed project site; however it occurs over 6 miles away in the Bolsa Chica Ecological Reserve and 9.55 miles to the southeast in the Huntington Beach Wetlands (SERC 2016a).

Southern Foredunes

Southern foredunes are similar to active coastal dunes but are subject to less wind, have more stable sand, and greater availability of groundwater; therefore, the area supports the establishment of plant species that further stabilize the dunes. This habitat lacks the perennial grasses of northern foredunes and has a higher proportion of suffrutescent (partially or slightly woody base) plants (Holland 1986). Native plant species commonly found in this habitat include beach morning glory (*Calystegia soldanella*), silver bur ragweed (*Ambrosia chamissonis*), and common eucrypta (*Eucrypta alba*). This habitat is not found in the immediate vicinity of the proposed project site; however this sensitive habitat type occurs approximately 9.5 miles south of the project site.

Common Wildlife

Due to the disturbed state of the project site and ongoing disturbance from surrounding industrial areas, the proposed Stanton site does not provide habitat capable of supporting a diverse assemblage of wildlife. The offsite linear facilities, worker parking area, and offsite staging areas are also in developed or disturbed areas. While ruderal habitats generally have lower value for wildlife many species found in grassland and cropland habitats may also occur in disturbed habitats (DWR and Reclamation 1996). Native species such as western fence lizard (*Sceloporus occidentalis*), Brewer's blackbird (*Euphagus cyanocephalus*), lesser goldfinch (*Spinus psaltria*), and California ground squirrel (*Otospermophilus beecheyi*) may tolerate the conditions of ruderal habitats; however none of these species were observed during surveys (DWR and Reclamation 1996).

Species observed during the applicant's biological resource reconnaissance surveys within or adjacent to the proposed project site include American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), barn swallow (*Hirundo rustica*), house finch (*Haemorhous mexicanus*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), Eurasian collared dove (*Streptopelia decaocto*), western kingbird (*Tyrannus verticalis*), killdeer (*Charadrius vociferus*), northern mockingbird (*Mimus polyglottos*), white-crowned sparrow (*Zonotrichia leucophrys*), and

rock pigeon (*Columba livia*). Staff also observed mourning dove and killdeer during a site visit in April 2017. In addition, staff observed killdeer, mourning dove, northern mockingbird, house sparrow (*Passer domesticus*), black phoebe (*Sayornis nigricans*), and western kingbird during a site visit in June 2017. These and other birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code, but without other special-status listing, may nest in open areas and in unused structures on and adjacent to the Stanton site. In addition, staff observed multiple small mammal burrows that were likely created by gophers or voles.

The applicant provided the results of a reconnaissance survey within portions of the SCE Barre Substation property that are part of the Stanton project in Supplemental Response to Data Request A17 (SERC 2017j). Surveyors documented the presence of common birds species including common raven, barn swallow, house finch, mourning dove, northern mockingbird, white crowned sparrow, rock pigeon, Brewer's blackbird (*Euphagus cyanocephalus*), song sparrow (*Zonotrichia leucophrys*), black phoebe, California towhee (*Meozone crissalis*), and house sparrow. The surveyors documented eight inactive nests of which seven were located in unknown ornamental trees along the west and south barriers of the SCE Barre Peaker Unit and one was located in a bougainvillea (*Bougainvillea spectabillis*) located along the southern fence line (SERC 2017j). One red-tailed hawk (*Buteo jamaicensis*) was observed perching at the SCE Barre Substation and adjacent towers however no raptor nests were observed on any of the towers in or adjacent to the survey area.

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 significant 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:

Special-status species:

- 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). CRPR 3 and 4 species are required to be evaluated under CEQA if they meet the definitions of Sec. 1901, Chapter 10 (NPPA) or Secs. 2062 and 2067 (CESA) of the California Department of Fish and Game Code;
- A plant listed as rare under the California Native Plant Protection Act;

- A locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances; or
- Any other species receiving consideration during environmental review under the California Environmental Quality Act (CEQA).

The project site, offsite linear facilities, and staging and worker parking areas are previously disturbed and either unpaved, paved, and/or graveled. There is a row of trees on the north side of Parcel 2 of the project site, however these trees are located outside the parcel and within the SCE transmission line corridor right-of-way. Vegetation on the unpaved parcel is limited to weedy species and is regularly maintained by mowing for fire prevention. In addition, vegetation within the SCE Barre Substation is primarily disturbed land with relatively compacted soils and ruderal and ornamental vegetation, including landscape trees, within the survey area. Rare plants and most special-status wildlife are not expected to occur on site at any location. In addition, there are no other nearby natural areas that could support special-status species that would have the potential to be affected by construction and operation of the proposed project.

Biological Resources Table 2 identifies the occurrences of special-status species reported in the California Natural Diversity Database (CDFW 2017a) and California Native Plant Society's (CNPS 2017) Inventory of Rare and Endangered Plants that have the potential to occur in the habitats near the proposed Stanton project; however, the majority of the species would not be likely to occur on site.

Biological Resources Table 2
Special-status Species Known to Occur or Potentially Occurring Within a 10-mile Radius of the Stanton Energy Reliability Center Site

Common Name (*Scientific Name*)	Conservation Status Fed/State/ CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
PLANTS		
Chaparral sand-verbena (*Abronia villosa* var. *aurita*)	__/__/1B.1/ G5T3T4/S2	Not Likely to Occur
Ventura Marsh milk-vetch (*Astragalus pycnostachyus var. lanosissimus*)	FE/SE/1B.1/ G2T1/S1	Not Likely to Occur
Parish's brittlescale (*Atriplex parishii*)	__/__/1B.1/ G1G2/S1	Not Likely to Occur
Davidson's saltscale (*Atriplex serenana* var. *davidsonii*)	__/__/1B.2/ G5T1/S1	Not Likely to Occur
Lewis' evening-primrose (*Camissoniopsis lewisii*)	__/__/3/G4/S4	Not Likely to Occur
Southern tarplant (*Centromadia parryi* ssp. *australis*)	__/__/1B.1/ G3T2/S2	Low
Salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*)	FE/SE/1B.2/ G4?T1/S1	Not Likely to Occur

Common Name (*Scientific Name*)	Conservation Status Fed/State/ CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Southern California Black Walnut (*Juglans californica*)	_/_/4.2/G3/S3	Low
Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)	__/__/1B.1/ G4T3/S2.1	Not Likely to Occur
Mud nama (*Nama stenocarpum*)	__/__/2B.2/ G4G5/S1S2	Not Likely to Occur
Coast woolly-heads (*Nemacaulis denudata* var. *denudata*)	__/__/1B.2/ G3G4T3?/ S2.2	Not Likely to Occur
California Orcutt grass (*Orcuttia californica*)	FE/SE/1B.1/G1/S1	Not Likely to Occur
South coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*)	__/__/3.2/G5?T3/S3	Not Likely to Occur
Brand's star phacelia (*Phacelia stellaris*)	__/__/1B.1/ G1/S1	Not Likely to Occur
Salt spring checkerbloom (*Sidalcea neomexicana*)	__/__/2B.2/ G4?/S2S3	Not Likely to Occur
Estuary seablite (*Suaeda esteroa*)	__/__/1B.2/ G3/S2	Not Likely to Occur
San Bernardino aster (*Symphyotrichum defoliatum*)	__/__/1B.2/ G2/S2	Low
WILDLIFE		
Invertebrates		
Crotch bumble bee (*Bombus crotchii*)	__/__/ G3G4/S1S2	Not Likely to Occur
Western tidal-flat tiger beetle (*Cicindela gabbii*)	__/SA/G4/S1	Not Likely to Occur
Sandy beach tiger beetle (*Cicindela hirticollis gravida*)	__/SA/G5T2/S1	Not Likely to Occur
Western beach tiger beetle (*Cicindela latesignata latesignata*)	__/SA/G4T1T2/S1	Not Likely to Occur
Senile tiger beetle (*Cicindela senilis frosti*)	__/SA/G4T1/S1	Not Likely to Occur
Monarch Butterfly – California overwintering population (*Danaus plexippus* pop. 1)	__/__/G4T2T3/S2S3	Low
Wandering (=saltmarsh) skipper (*Panoquina errans*)	__/__/ G4G5/S2	Not Likely to Occur
Dorothy's El Segundo Dune weevil (*Trigonoscuta dorothea dorothea*)	__/SA/G1T1/S1	Not Likely to Occur
Mimic tryonia (=California brackishwater snail) (*Tryonia imitator*)	__/SA/G2G3/S2S3	Not Likely to Occur
Reptiles and Amphibians		
Pacific green sea turtle (*Chelonia mydas*)	FT/__/G3/S1	Not Likely to Occur

Common Name (*Scientific Name*)	Conservation Status Fed/State/ CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Western pond turtle (*Emys marmorata*)	__/SSC/G3G4/S3	Low
Coast horned lizard (*Phrynosoma blainvillii*)	__/SSC/G4G5/S3S4	Not Likely to Occur
Fish		
Santa Ana sucker (*Castostomus santaanae*)	FT/__/G1/S1	Not Likely to Occur
Birds		
Tricolored blackbird (*Agelaius tricolor*)	BCC/SSC/G2G3/S2	Not Likely to Occur
Great blue heron – Nesting Colony (*Ardea herodias*)	__/__/G5/S4	Low
Burrowing owl (*Athene cunicularia*)	BCC/SSC/G4/S2	Low
Ferruginous hawk (*Buteo regalis*)	BCC/WL/G4/S3S4	Not Likely to Occur
Swainson's hawk (*Buteo swainsoni*)	BCC/ST/G5/S3	Low
Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)	BCC/SCC/G5T3Q/S3	Not Likely to Occur
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT/BCC/SSC/ G4T3/S2	Not Likely to Occur
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FT/BCC/SE/G5T2T3/ S1	Not Likely to Occur
American peregrine falcon (*Falco peregrinus anatum*)	FD/SD/G4T4/S3S4	Not Likely to Occur
Yellow-breasted chat (*Icteria virens*)	__/SSC/ G5/S3	Not Likely to Occur
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC/ G3T2/S2	Not Likely to Occur
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	__/SE/G5T3/S3	Not Likely to Occur
Light-footed clapper rail (*Rallus longirostris levipes*)	FE/SE, FP/__/ G5T1T2/S1	Not Likely to Occur
Bank swallow (*Riparia riparia*)	__/ST/__/ G5/S2S3	Not Likely to Occur
Black skimmer (*Rynchops niger*)	BCC/SSC***I***__/ G5/S1S3	Not Likely to Occur
Yellow warbler (*Setophaga petechial*)	BCC/SCC/__/ G5/S3S4	Not Likely to Occur
California least tern (*Sternula antillarum browni*)	FE/SE, FP/ G4T2T3Q/S2S3	Not Likely to Occur
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SE/__/ G5T2/S2	Not Likely to Occur

Common Name (*Scientific Name*)	Conservation Status Fed/State/ CRPR/G-Rank/S-Rank	Potential for Occurrence in Project Impact Area
Mammals		
Mexican long-tongued bat (*Choeronycteris Mexicana*)	__/SSC/ G4 /S1	Not Likely to Occur
Western mastiff bat (*Eumops perotis californicus*)	__/SSC/ G5T4/S3?	Low
Silver-haired bat (*Lasionycteris noctivagans*)	__/SA/__/ G5/S3S4	Not Likely to Occur
Western yellow bat (*Lasiurus xanthinus*)	__/SSC/G5/S3	Not Likely to Occur
South coast marsh vole (*Microtus californicus stephensi*)	__/SSC/G5T1T2/ S1S2	Not Likely to Occur
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	__/SSC/G4/S2S3	Not Likely to Occur
Southern California saltmarsh shrew (*Sorex ornatus salicornicus*)	__/SSC/G5T1?/S1	Not Likely to Occur

Sources: CDFW 2017a; CNPS 2017; USFWS 2017

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
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.
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 For Occurrence:

Known to Occur	Species or sign of its presence observed on the site
High	Species or sign not observed on the site, but reasonably certain to occur on the site
Moderate	Species or sign not observed on the site, but conditions suitable for occurrence
Low	Species or sign not observed on the site, conditions marginal for occurrence
Not Likely to Occur	Species or sign not observed on the site, conditions unsuitable for occurrence

Special-Status Plant Species

The Stanton project site, offsite linear facilities, and offsite staging and worker parking areas is entirely disturbed or developed with no natural habitats present. The vegetation observed during the June 2016 and April 2017 reconnaissance surveys and staff site visits was limited to ruderal vegetation, primarily composed of non-native grasses and herbaceous species and a few scattered trees and shrubs. Several special-status plant species have been documented in the regional vicinity of the proposed project, including, Parish's brittlescale (*Atriplex parishii*; CRPR 1B.1) southern tarplant, and San Bernardino aster (*Symphyotrichum defoliatum*; CRPR 1B.2). Species which are known to occur in valley and foothill grasslands as well as species with recent or historic records within 1 mile of the proposed project site were considered as having a low potential to occur. While the potential for special-status plants to occur at the project site and laydown area is low, rare plant surveys were conducted on the project site during appropriate floristic period for the species identified as having a low potential to occur on site. No special-status plant species were observed during the reconnaissance survey or the floristic surveys. Rare plant surveys were not conducted along the natural gas line route or at the offsite worker parking area due to the lack of suitable habitat in these developed areas.

The applicant provided the results of a land cover/vegetation community survey within portions of the SCE Barre Substation property that are part of the Stanton project in Supplemental Response to Data Request A17 (SERC 2017j). Surveyors documented primarily disturbed land with relatively compacted soils and ruderal and ornamental vegetation within the survey area. The ruderal areas had been recently mowed at the time of surveys and the dominant species was yellow star thistle (SERC 2017j). No special-status plant species are expected to occur in the survey area based on the level of disturbance and types of habitat on the SCE Barre Substation property. No special-status plants were observed during the reconnaissance survey.

Special-Status Wildlife

The applicant conducted general reconnaissance surveys for the proposed project in June 2016 and April 2017. Focused surveys for burrowing owl were performed based on Staff's Data Requests, Set 1, A16, as staff was unable to determine if there was a potential for this special-status species to occur within the Stanton project vicinity based on information provided in the AFC (SERC 2017b). No special-status wildlife or sign were detected during the June 2016 surveys. In April 2017, the applicant conducted surveys focused on observations of wildlife sign including burrows, scat, tracks, remains, and other distinguishing indicators. No observations of western burrowing owl or sign including burrows, scat, tracks, remains, and other distinguishing indicators were detected during surveys and the area surveyed lacked burrows, burrow surrogates, and fossorial mammal dens that could be used by burrowing owls (SERC 2017b). During reconnaissance surveys of the SCE Barre Substation property in August 2017 no special-status wildlife or sign were detected. No observations of western burrowing owl or sign including burrows, scat, tracks, remains, and other distinguishing indicators were detected during surveys and the area surveyed lacked burrows, burrow surrogates, and fossorial mammal dens that could be used by burrowing owls (SERC 2017j).

Bird species that are protected under the MBTA and California Fish and Game Code could be affected by project construction and associated site clearance as well as operation. The project region supports a wide range of both resident and migratory bird species. The area is located within the Pacific Flyway, a very broad corridor stretching along the Pacific Coast from Mexico north to Alaska and into Siberia, Russia. Birds utilizing the area surrounding the project site and the regional vicinity include resident breeding birds, migratory birds that breed in the region but winter elsewhere, birds that forage and rest in the area during migration between breeding and wintering grounds, and species that winter in the project region. Nesting habitat on site, and in areas immediately adjacent to the site, is limited to ruderal vegetation, including scattered trees and shrubs. Birds that nest on the ground on gravely substrates, such as killdeer, could also nest on or adjacent to the site. Small mammals and reptiles as well as ruderal plants provide foraging opportunities for birds on site. Native birds, regardless of any additional conservation status at the local, state, or federal level, are afforded protection by the federal MBTA and California Fish and Game Code (Sections 3503 and 3513).

JURISDICTIONAL WATERS

Waters of the United States

The Stanton project site is located on two parcels that include a partially paved developed site and an undeveloped disturbed site. Neither parcel supports wetlands potentially under the jurisdiction of the United States Army Corps of Engineers (USACE). In addition, there are no wetlands potentially under the jurisdiction of USACE located adjacent to the project site or offsite linear facilities, staging areas, or worker parking areas. There are two waters under the jurisdiction of USACE (i.e. of the United States) that occur in the Stanton project area. These waters are the Stanton Storm Channel and Carbon Creek Channel (USFWS 2017). The project site is within the North Orange County Watershed Management Area, more specifically within the Anaheim

Bay–Huntington Harbour Watershed. The Anaheim Bay–Huntington Harbour Watershed encompasses approximately 80 square miles south of the Carbon Creek Watershed (OCPW 2011). The Stanton project site is bisected by the Stanton Storm Channel. The Stanton Storm Channel drains into the Bolsa Chica Channel that ultimately flows into Huntington Harbour. It is maintained by the Orange County Public Works Department (OCPW 2013). The Stanton Storm Channel is classified in the National Wetland Inventory (NWI) as an intermittent riverine system with temporary flooding (USFWS 2017). It is composed of reinforced concrete and engineered earth.

Carbon Creek Channel is located approximately 1.6 miles north from the proposed project site and the project applicant proposes to have the 2.75 mile natural gas pipeline cross this waterway. Carbon Creek flows from the foothills into Coyote Creek and joins the San Gabriel River to ultimately drain into Anaheim Bay. Carbon Creek Channel is a flood protection work constructed by the USACE (Farrar pers comm 2017). It is maintained by the Orange County Flood Control District (OCFCD) and is composed of reinforced concrete and engineered earth. Carbon Creek Channel is classified in the NWI as an intermittent riverine system that may seasonally flood (USFWS 2017).

Waters of the State

"Waters of the State" are defined by the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the USACE under Section 404 of the Clean Water Act. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Act.

Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

Waters of the state are also regulated by the CDFW, pursuant to Section 1600 of California Fish and Game Code. The Fish and Game Code regulates activities that could divert, obstruct, or change the natural flow or the bed, bank, or channel of any river, stream, or lake. CDFW would require a Lake and Streambed Alteration Agreement if the activities could substantially adversely affect an existing fish or wildlife resource. Waters of the state on the Stanton site and along the linear facilities include the Stanton Storm Channel and Carbon Creek Channel. The CDFW Region 5 office typically takes jurisdiction over concrete-lined channels, which is not always the case throughout California (Valand pers comm. 2017).

IMPACT ASSESSMENT

METHOD 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, § 15382). In this analysis the following impacts to biological resources are considered significant:

- 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 USFWS;
- 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, USFWS, 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 a sensitive natural community (i.e., a community that is especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies) identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- 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 local 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.

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. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance and are still reasonably foreseeable and related to the operation of the project. Direct or indirect impacts on biological resources could be permanent or temporary in nature. All impacts that result in the irreversible removal of biological resources are considered permanent. Any

impact considered to have reversible effects on biological resources can be viewed as temporary.

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

General Biological Resources Conditions of Certification

To avoid or minimize potentially adverse impacts to the sensitive biological resources described above, staff recommends that a Designated Biologist and Biological Monitor(s) be employed to ensure implementation of the mitigation measures described below. The selection criteria and minimum qualifications of the Designated Biologist and Biological Monitor(s) are described in staff's proposed Conditions of Certification **BIO-1 (Designated Biologist Selection)** and **BIO-3 (Biological Monitor Selection)**. The duties and authority of the Designated Biologist and Biological Monitor are described in staff's proposed Condition of Certification **BIO-2 (Designated Biologist Duties)** and Condition of Certification **BIO-4 (Designated Biologist and Biological Monitor Authority)**. The Designated Biologist and/or Biological Monitor would be responsible, in part, for developing and implementing the Worker Environmental Awareness Program (WEAP) (see Condition of Certification **BIO-5**), which is a mechanism for training the project construction and maintenance personnel as well as project site visitors on how to protect sensitive biological resources and the consequences of non-compliance.

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

CONSTRUCTION IMPACTS AND MITIGATION

Construction and Associated Site Clearance Impacts to Native Vegetation

The proposed Stanton project would not be located adjacent to any riparian habitat or sensitive natural communities that exist in the region. The proposed project area is either paved, graveled or undeveloped with Parcel 1 composed of disturbed habitat with ruderal vegetation while Parcel 2 is currently used for vehicle parking and pallet storage. Similar disturbed habitat is located within the SCE Barre Substation property across Dale Avenue where the offsite portion of the underground gen-tie line would be located. Regionally unique habitat or habitat capable of supporting special-status species is not present within the proposed project area. Construction activities would require the removal of weedy vegetation. New plantings as part of a visual screening landscape plan, which was developed by the applicant and the city of Stanton (refer to the **Visual Resources** section of the staff assessment for additional information), would replace ruderal vegetation along the north and east boundary of the Stanton project site with drought tolerant species that include evergreen trees, medium size shrubs, and

ornamental grasses. Significant impacts to native vegetation would not occur and no mitigation is proposed.

Construction and Associated Site Clearance Impacts to Common Wildlife

Due to the highly developed nature of the proposed project site and adjacent areas, these areas do not act as significant wildlife corridors. Nonetheless, direct loss of small mammals, reptiles, and other less mobile species could occur during construction of the proposed project. This would result primarily from the use of vehicles and equipment at the site, which could collapse underground burrows or drive over animals. Additionally, construction activities and increased human presence may temporarily disrupt breeding or foraging activities of some common wildlife species.

The proposed project area provides marginally suitable nesting habitat for a variety of common bird species. Birds could nest in the ruderal vegetation on site as well as in the scattered trees and shrubs along the perimeter and ruderal areas adjacent to the Stanton site. Additionally, some bird species adapted to disturbed environments could nest in equipment or other available substrate in the areas within the Stanton site such as the pallet storage yard or landscaping trees on the SCE Barre Substation property. The graveled areas and areas with sparse vegetation associated within the Stanton site provide nesting substrate for small songbirds and some ground-nesting species (e.g., killdeer). Many adult birds would flee from equipment during project construction. However, nestlings and eggs of ground-nesting birds or birds nesting on scattered trees, shrubs, or equipment and facilities would be vulnerable to impacts during project construction. Nests, nestlings, and eggs of native birds are also protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503 and 3513). If initial site grading or vegetation removal were to occur during nesting season, then it could destroy bird nests, including eggs or nestling birds.

The applicant has proposed to conduct “a preconstruction survey for nesting birds in the Stanton project area, including areas within 100 feet of all Stanton project facilities, utility corridors, and access roads including the SCE Barre Substation property. If an active nest of a species protected under the MBTA is found, construction activity will be limited within an appropriately sized buffer around the nest, which will be monitored by a qualified biologist to avoid impacts to the nest.” Staff agrees with the need for preconstruction nest surveys and has incorporated this into Condition of Certification **BIO-8** (Preconstruction Nest Surveys and Impacts Avoidance and Minimization Measures for Breeding Birds). This condition of certification would require a survey for birds in advance of any work conducted between February 15 and August 31 and establishment of a no-disturbance buffer if a nest is identified. Staff consulted with a CDFW representative and has incorporated their recommended survey radius of 500 feet (CDFW 2018a). Surveys would include the orders *Falconiformes* and *Strigiformes* (raptors and owls) and occur within a 500-foot radius of the construction site. Surveys would be conducted at appropriate nesting times and concentrate on potential roosting or perch sites. If any nests of birds of prey are observed, these nests would be designated an ecologically sensitive area and protected (while occupied) by a minimum 500-foot radius during project construction.

Staff does not agree with the applicant's proposed measure which states "nests may be relocated, or young birds may be rehabilitated and released under the guidance of CDFW, as necessary, to avoid project delays attributable to the presence of active bird nests". This applicant-proposed measure is a violation of the MBTA, which makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird including nests with viable eggs). Staff consulted with USFWS representatives and confirmed this activity would be a violation of the MBTA (CEC2018b). In addition, CDFW provided written comments stating that the agency does not agree with this applicant proposed measure (CDFW 2018a). This applicant-proposed measure would not be in compliance with California Fish and Game Code sections 3503, 3503.5, 3511, and 3513, which state permittees shall not take or possess or needlessly destroy the nests or eggs of any bird; shall not take, possess, or destroy nests or eggs of raptors; shall not take or possess any fully protected bird; and shall not take or possess any nongame migratory birds. This measure is therefore not incorporated into staff's recommended conditions of certification.

Additionally, general measures presented in Condition of Certification **BIO-7** (Impact Avoidance and Minimization Measures) (e.g., limit disturbance areas) would avoid and minimize impacts to nesting birds. With implementation of Conditions of Certification **BIO-7** and **BIO-8**, significant impacts to nesting birds would not result from proposed project construction and associated site clearance activities and compliance with MBTA and California Fish and Game Code (Sections 3503 and 3513) would be achieved.

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

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

Construction and Associated Site Clearance Impacts to Special-Status Plant Species

Special-status plants recorded within one mile of the proposed Stanton site and offsite laydown or worker parking areas include Parish's brittlescale, San Bernardino aster, and southern tarplant; see **Biological Resources Table 2**. Existing conditions in the proposed project area are not likely to support any special-status plants, and none have been recorded at either the Stanton site, offsite staging or worker parking areas, or along the generator tie-line route within the SCE Barre Substation property. The proposed Stanton site and the offsite laydown area and offsite worker parking areas are either within existing paved areas or in vacant and previously developed parcels with no natural habitat. Rare plants do not occur in any adjacent areas and therefore recruitment into the project site would be unlikely. Ongoing maintenance of undeveloped areas, including mowing and vegetation removal for fire prevention, would prevent any rare plant seedlings that did colonize on the site from surviving to establish

a population. Therefore, direct impacts to special-status plants from construction would not likely occur and no mitigation is proposed.

Construction Impacts to Special-Status Wildlife

Wildlife habitat in the project area has been significantly fragmented by urban development. The Stanton project site, offsite linear facilities, offsite staging areas, and the offsite worker parking areas near the Stanton site are located in developed areas; therefore, there would be no direct impacts resulting from disruption of wildlife movement, or habitat loss or fragmentation.

There are no special-status wildlife species expected to occur at the project site or offsite worker parking and staging areas, and none are expected to forage, roost, or breed in adjacent areas. Therefore, direct and indirect impacts to special-status wildlife from construction or associated site clearance would not occur and no mitigation is proposed.

Construction Impacts to Jurisdictional Waters

Two jurisdictional water bodies cross the proposed Stanton project site and offsite natural gas line route. The project site is bisected by the Stanton Storm Channel. Carbon Creek Channel is located approximately 1.6 miles north from the Stanton project site and would be crossed by the natural gas pipeline. Indirect impacts to biological resources may result if construction contaminants, sediment, or untreated storm water effluent from the proposed project area enter these areas. The applicant has committed to follow relevant procedures and best management practices (BMPs) for sedimentation prevention to avoid potential water quality impacts from construction in accordance with the project's Storm Water Pollution Prevention Plan (SWPPP) and General Construction National Pollutant Discharge Elimination System (NPDES) Permit, which has been included as a requirement of Condition of Certification **SOIL&WATER-1** (NPDES Construction Permit Requirements). Please refer to the **Soil and Water Resources** section of the staff assessment for additional information.

The Stanton Storm Channel would be crossed by two bridges, a vehicle bridge and a utility bridge, as part of the proposed project (SERC 2016i). Impacts to biological resources located downstream could occur if work was conducted in the channel or if debris entered the channel during construction. In addition, the natural gas line route would be installed using jack and bore drilling techniques (SERC 2017b). The natural gas line route would be located under the Carbon Creek Channel on Dale Street. Jack and bore drilling under the channel would be necessary to install the natural gas line underground for the entire route. Impacts could occur if jack and bore drilling activities result in a frac-out. A frac-out occurs when the drilling fluid inadvertently escapes and moves up through the soil into the channels. Avoidance of a frac-out is important to avoid impacts to Carbon Creek Channel.

Due to the proposed construction of the two bridges across Stanton Storm Channel and jack and bore drilling operations under the Carbon Creek Channel crossing staff consulted with the USACE and the CDFW, as both agencies review and issue permits dealing with impacts to waterways. At the federal level, USACE issues permits in association with the Clean Water Act (Section 404). At the state level, CDFW would issue permits for streambed and bank alterations (Section 1600 et seq, referred to as a Lake and Streambed Alteration Agreement), if not for the Energy Commission's in lieu permitting authority under the Warren-Alquist Act.

Staff coordinated with USACE representatives on September 7, 2017 to determine if USACE needed to issue any permits for the project. Because Carbon Creek Channel is not a navigable water or tidally influenced, it is not covered under Section 10 of the Rivers and Harbors Act. Directional (jack and bore) drilling is only a regulated activity in navigable waters which are covered under Section 10. In addition, because jack and bore drilling would not result in a discharge of dredged or fill material into a water of the U.S., no Section 404 permit would be required either. However, since Carbon Creek Channel is a flood protection work constructed by the USACE, the applicant would need to contact the USACE Engineering Division to determine whether a section 408 permission, which covers any work within USACE-constructed public facilities, is required. Refer to the **Soil and Water Resources** section of the staff assessment for additional information. In the event of a frac-out, the USACE would cover associated clean-up work under Nationwide Permit (NWP) 12, which authorizes temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

Because Stanton Storm Channel is not a navigable water or tidally influenced, bridge construction would not be conducted in, over, or under a navigable water of the U.S., and therefore this activity would not be regulated under Section 10 of the Rivers and Harbors Act. Bridge construction would not result in a discharge of dredged or fill material into waters of the United States (Section 404) as no ground disturbance would take place within the storm channel. Staff has determined, based on the information from the applicant and discussions with representatives with the USACE Los Angeles District, that a 404 permit from the Corps would not be needed for the vehicle or utility bridge installation either (CEC 2018c).

Staff discussed potential impacts of the Stanton project with CDFW representatives on several occasions as part of agency coordination to aid staff's preparation of the Preliminary Staff Assessment. CDFW advised that the applicant would need to notify the CDFW with a Notification of Lake or Streambed Alteration (CDFW Form 2023) for these type of activities. CDFW reviewed staff's proposed conditions of certification, such as the monitoring during jack and bore activities, developing a frac-out plan, and completing pre-construction nesting bird surveys. CDFW provided informal comments on August 3, 2017 and formal comments via letter on December 14, 2017 (CDFW 2018a).

Staff requested additional information from the applicant that would address any outstanding information needs that would typically be included in a Notification of Lake or Streambed Alteration (LSA). In response, the applicant provided a completed CDFW Form 2023 for the Utility and Vehicle Bridge Crossing and a completed CDFW Form 2023 for the Carbon Creek Channel Crossing (SERC Data Request Response Set 3, 09.21.17; TN 221300). Staff provided the completed notification forms to CDFW and received a letter from CDFW stating that while the proposed Stanton project would be subject to the notification requirement in Fish and Game Code section 1602, a Lake or Streambed Alteration Agreement would not be required (CDFW 2018b).

In order to minimize impacts to Carbon Creek Channel, staff proposes Condition of Certification **BIO-9**, which would require the Designated Biologist or Biological Monitor to be present during jack and bore drilling under the channel to monitor operations in the event of frac-out (accidental release) of drilling fluid into the channel. This condition of certification would require the Designated Biologist or Biological Monitor to visually inspect the drill path, monitor the water body for evidence of release, examine the drilling fluid pressures and return flows, approve drilling/boring setup locations, and verify the perimeter of the work site is adequately flagged prior to equipment setup to prevent impacts to Carbon Creek Channel . If any of the boring operations lead to frac-out or the fluid pressures and return flows drop, the Designated Biologist or Biological Monitor would order all equipment to be shut down. As stated above, the applicant would then need to apply for NWP 12 coverage for any remediation work as USACE does not issue them prior to being required. In addition, see the **Soil and Water Resources** section of the staff assessment for Soil and Water staff's proposed Condition of Certification **SOIL&WATER-7**, which recommends the development and implementation of a frac-out plan, which would specify the emergency and remedial measures to protect Carbon Creek Channel in the event drilling mud is released to the creek or creek bed.

With implementation of these measures, indirect and direct water quality impacts and associated impacts to biological resources located downstream in adjacent jurisdictional waters would be less than significant.

General Construction and Associated Site Clearance Impacts

Noise

The Stanton project site is located in an area already occupied by other industrial uses including SCE's Barre Substation, Barre Peaker Unit, Barre-Ellis 220-kV transmission line, and other existing industrial facilities. The existing industrial uses as well as rail traffic on the UPRR and automobile traffic on Dale Avenue, Pacific Street, and Fern Avenue create elevated ambient noise levels to which most local wildlife species have acclimated. However, noise from construction and associated site clearance activities could discourage wildlife from foraging and nesting near the proposed Stanton project area, due to interference with communication, disturbance or disruption of activities, or startling from loud noises. Avian species are most likely to be adversely impacted by construction noise. Many bird species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction and associated site clearance activities could adversely affect nesting behavior and other activities.

Construction and associated site clearance noise as well as noise from power plant commissioning is expected to be a constant noise source lasting approximately 12 months. Completion of the electric interconnection facilities by SCE is forecasted to require an additional 2 months.

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

Site clearance and construction would generate sudden or loud startling noises, and could result in flushing birds. Flushing of nesting birds could increase the risk of predation or cause nest failure if birds repeatedly leave the nest and eggs are not properly incubated, or eggs or nestlings are knocked from the nest by a flushing parent. Foraging birds are expected to have more flexibility in avoiding areas with disruptive noise, but nesting birds would be vulnerable to these effects and take of nests protected under the MBTA and California Fish and Game Code (Sections 3503 and 3513) could occur. Noise levels may be generally considered to constitute an adverse impact when above 60 A-weighted decibels (dBA), however, this is a general guideline used by Energy Commission staff. Recent literature suggests that noise levels over 100 decibels may not disturb western snowy plover (USFWS 2011), and, more recently, the Energy Commission declined 60 decibels as too low a disturbance threshold to use for avian species (CEC 2014).

There are no special-status species known or potentially occurring on the Stanton project site, offsite worker parking area, offsite staging areas, along the linear facilities or in adjacent areas that may be affected by construction and associated site clearance noise. However, common wildlife such as birds protected by the MBTA and California Fish and Game Code (Sections 3503 and 3513) have the potential to nest on the ground or in ruderal vegetation and trees on site and adjacent to the Stanton project area. There is limited offsite potential breeding habitat under the existing SCE Barre-Ellis 220-kV line. This area already experiences an elevated level of noise from the adjacent industrial facilities as well as noise associated with corona discharge from the transmission line.

Construction (including site clearance) noise impacts would be created by heavy machinery such as a dump truck, backhoe, concrete mixer, Derrick crane, jack hammer, pneumatic tools, rock drill, and various associated trucks. Construction activities would typically occur between 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays and would result in a short-term, temporary increase in the ambient noise level.

The applicant determined noise impacts at offsite sensitive receptors, called LT1 and LT2, (SERC 2016a), based on human presence. While this is a common technique for determining impacts, some marginal nesting habitat occurs closer to the project site than LT1 and LT2, specifically, the trees located on the SCE transmission line corridor located north of the Stanton site. LT1 is located very close to the SCE Barre Substation where nesting activity was determined by the presence of former nests. LT2 is located in a residential area just north of the Stanton project site. However, due to the developed nature of the site and presence of existing industrial facilities, staff found these two locations to be adequate to estimate impacts to nesting birds. Ambient noise at LT1 is estimated to be 68 dBA and 59 dBA at LT2. Cumulative Ambient and Construction noise at LT1 and LT2 is estimated to be 73 dBA.

While construction noise would be elevated at LT1 and LT2 and therefore elevated at the SCE transmission line corridor, the applicant has committed to conducting pre-construction nesting bird surveys and monitoring nesting activities as part of construction and associated site clearance activities to determine whether nests could potentially be disturbed. If an active nest of a species protected under the MBTA and California Fish and Game Code (Sections 3503 and 3513) is found, any construction activity would be limited within an appropriately sized buffer around the nest, which would be monitored by a qualified biologist to avoid impacts to the nest.

In addition, Noise staff have proposed Condition of Certification **NOISE-6** (Construction Noise Restrictions), which would restrict heavy equipment operation and noisy construction times. It would also ensure that construction work would be performed in a manner that prohibits excessive noise and reduces the potential for noise complaints as much as practicable. It would require that haul trucks and other engine-powered equipment be equipped with adequate mufflers and other state-required noise attenuation devices and haul trucks would be operated in accordance with posted speed limits. In addition, truck engine exhaust brake use (jake braking) would be limited to emergencies.

Biological Resources staff agrees with the applicant's proposal to complete pre-construction nesting bird surveys, and has incorporated this into Condition of Certification **BIO-8**, Pre-construction Nest Surveys and Impact Avoidance and Minimization Measures for Breeding Birds. With implementation of Condition of Certification **BIO-8** and Condition of Certification **NOISE-6**, impacts to nesting birds would be less than significant.

Lighting

Stanton project construction activities are anticipated to occur between 7:00 a.m. and 8:00 p.m., Monday through Saturday; however, some critical and time-sensitive construction activities could continue past 8:00 p.m. and would require a nightshift. During some construction periods and startup phase, work could continue for 24 hours per day, seven days a week. Bright lighting at night could disturb the nesting, foraging, or mating activities of wildlife in nearby undeveloped areas, such as the ruderal grassland under the SCE Barre-Ellis 220-kV transmission line corridor, and make wildlife more visible to predators. Night lighting could be disorienting to migratory birds and, if placed on tall structures, may increase the likelihood of collision. Although

existing operations at SCE's Barre Substation and Barre Peaker Unit, industrial and commercial facilities adjacent to the proposed Stanton project site, and nearby vehicle traffic provide an elevated ambient level of lighting to which local species have acclimated, potentially significant impacts to sensitive wildlife from increased night lighting could occur.

If night construction were required, the applicant proposes to use temporary lighting that would be focused and directed on the work areas and away from nearby residences (SERC 2016a). These measures are incorporated into Condition of Certification **VIS-3** (Site Lighting - Project Construction and Commissioning) (refer to the **Visual Resources** section of the staff assessment for the full text of this condition). With implementation of these measures, impacts to wildlife from construction night lighting would be less than significant.

Invasive Weeds

The spread of invasive weeds destroys wildlife habitat and forage, threatens endangered species and native plants, and increases soil erosion and groundwater loss. Invasive weeds can easily colonize areas of disturbance and the spread of invasive plants is a major threat to biological resources because non-native plants can displace native plants and supplant wildlife foods that are important to herbivorous species, resulting in overall habitat degradation. Construction activities and soil disturbance could introduce new invasive weeds to areas adjacent to the Stanton project site or areas downstream via the Stanton Storm Channel, and could further spread weeds already present in the project vicinity. The Stanton Storm Channel drains into the Bolsa Chica Channel, which flows into Huntington Harbour and the Seal Beach National Wildlife Refuge on the US Naval Weapons Station. The Refuge is part of Anaheim Bay, which flows to the ocean. Huntington Harbour also connects with the Bolsa Chica Ecological Reserve, which also flows to the ocean. These protected areas support special-status species and other native plants and wildlife.

No substantial invasive weed populations exist within the proposed project area as it is currently maintained by regular mowing. However, populations of foxtail brome (*Bromus madritensis*) and yellow star thistle (*Centaurea solstitialis*), both ranked "High" by Cal-IPC, were detected during surveys on both parcels of the Stanton project site and at both natural gas line staging areas (Staging Area A and B) identified by SoCalGas (SERC 2017b). In order to avoid and minimize the spread of existing weeds and the introduction of new ones, weed management measures are proposed. Staff's proposed Condition of Certification **BIO-7** includes a number of weed prevention measures, including the requirement that vegetation and ground disturbance be limited to the minimum required for construction of the project, and that ingress/egress be only along defined routes. Further, straw bales and other sediment control features would be required to be weed-free, and invasive non-native species would be prohibited from being used as landscape plantings. Storm water runoff would be contained and prevented from draining to adjacent habitats; therefore weed propagules would be prevented from washing into the storm channel (pursuant to Condition of Certification **SOIL&WATER-1**). Implementation of Condition of Certification **BIO-7** and **SOIL&WATER-1** would reduce potential impacts from introduction and spread of invasive weeds into downstream sensitive habitats to less than significant.

Storm Water Runoff

There are no creeks, drainages, or wetlands on the project site, offsite laydown area, or offsite parking areas. However, storm channels that bisect the proposed Stanton site could be impacted from storm water runoff during construction and associated site clearance if appropriate measures are not taken to prevent water from draining off site. Toxic materials washed from the site into downstream aquatic resources can injure or kill wildlife and vegetation, and degrade habitat. During construction and associated site clearance, the storm water would discharge to the Stanton Storm Channel via an existing NPDES permit.

The applicant has committed to preparing a SWPPP prior to commencement of construction and would install and employ best management practices (BMPs) prescribed therein to prevent sediment from entering watercourses during and after construction (SERC 2017m). Staff agrees with this proposed measure and has included it in staff's proposed Condition of Certification **BIO-7** (Impact Avoidance and Minimization Measures) which would require standard BMPs from the project SWPPP to be implemented during all phases of the proposed project to control storm water runoff. BMPs would include installation of silt fencing, berms, hay bales, and detention basins to control runoff from construction and associated site clearance areas. Sediment barriers such as straw bales or silt fences would also be installed to slow runoff and trap sediment. Only certified weed free materials would be used for erosion control. Soil and water staff has incorporated this into Condition of Certification **SOIL&WATER-1**, which would require the applicant to develop and implement a site-specific construction SWPPP. With implementation of these measures and the applicant's commitment to the impact minimization measures listed above, project impacts to biological resources from storm water runoff would be less than significant.

Operation Impacts And Mitigation

Noise

Excessive noise masks auditory cues from other birds, including potential mates, and approaching predators. Chronic exposure to excessive noise has been demonstrated to negatively affect foraging behavior, reproductive success, population density, and community structure (Habib et al. 2007; Bayne et al. 2008; Barber et al. 2010). The resource agencies often use a threshold of 60 dB as a threshold for adverse noise impacts.

Birds at the site are expected to be acclimated to the noise of the nearby industrial and commercial facilities, the adjacent roads, UPRR, and human development noise created by residential uses to the northwest and southeast of the site. Ambient daytime noise levels at the sound monitoring locations, LT1 and LT2, are estimated to be 68 dBA and 59 dBA, respectively. Operational noise levels at LT1 and LT2 would be 49 dBA and 43 dBA, respectively. LT1 is very near the SCE Barre Substation. LT2 is in a residential area very near the western edge of the project site. While birds could nest closer to the project site than LT2, staff determined that since the operational noise level would be less than the ambient noise level, operational noise impacts to breeding birds would be less than significant.

In addition, recommended Condition of Certification **NOISE-4** (Operational Noise Restrictions and Survey) would require the project to meet the city of Stanton Noise Ordinance limit of 50 dBA during operation. With implementation of these measures impacts associated with operational noise would be less than significant.

Lighting

The existing SCE Barre Substation and SCE Barre Peaker Unit, neighboring industrial and commercial facilities companies adjacent to the Stanton project site, and vehicle traffic traveling on Dale Avenue provide an elevated ambient level of light to which local wildlife have adapted. However, excessively bright lighting at night could disturb the nesting, foraging, or mating activities of wildlife in the neighboring area and make wildlife more visible to predators. Also, night lighting could be disorienting to migratory birds and, if placed on tall structures, may increase the likelihood of collision.

Plant operational lighting would be designed in accordance with the Illuminating Engineering Society of North America and meet safety standards in compliance with the Occupational Safety and Health Administration (SERC 2016a). Lighting would be installed to provide security and ambient general approach lighting for the Stanton site, control equipment enclosures, and operator interface locations and would consist of motion-sensitive directional lights. There would be manually controlled lighting for operation and maintenance activities at other locations on the Stanton project site.

The applicant states that operational lighting for the proposed Stanton project would be shielded and/or directed downward in order to minimize the potential for glare or spillover onto adjacent properties. To minimize backscatter of light to the sky and ensure that lighting does not obtrude beyond the project site, staff proposes Condition of Certification **VIS-4** (Lighting Management Plan – Project Operation) (refer to the **Visual Resources** section of the staff assessment for the full text of this condition). With implementation of these measures impacts to wildlife from operational night lighting would be less than significant.

Avian Collision and Electrocution

The proposed Stanton project site is in a highly urbanized area adjacent to existing industrial and commercial facilities, including SCE's Barre Peaker Unit and SCEBarre Substation, and existing transmission lines including the SCE Barre-Ellis 220-kV transmission line allowing for resident birds to acclimate to these current conditions. In addition, there are no wetlands adjacent to the Stanton project site or other known concentration areas for resident and migratory birds. The nearest significant ecological area that attracts a high concentration of resident and migratory birds is Seal Beach, which is 7 miles southwest of the project site. These factors greatly reduce the potential for direct impacts through avian collision with proposed project facilities.

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

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

Although collision may occur, it is not likely that bird mortality due to collision with project facilities would significantly reduce the population numbers of any bird species or that the reduction in numbers within any population would impair its function within the local ecosystem. Structures, such as stacks, greater than 350 feet are considered dangerous to migrating birds. The two exhaust stack enclosures would be the tallest features of the proposed Stanton project, with each at 70 feet tall. While this would be slightly taller than some of the adjacent buildings, the exhaust stack enclosures would be similar in size to nearby energy facilities, such as the SCE Barre Peaker Unit, across Dale Avenue, and therefore would not be expected to appreciably increase the potential for avian collisions.

The proposed project would interconnect to the regional electrical grid via a new approximately 0.35 mile long, single-circuit, three-phase 66-kV generator tie line that would be constructed as an entirely underground transmission line. Therefore, direct and indirect impacts to birds from collision with transmission structures are not expected.

Storm Water Runoff

Storm water runoff from open areas on both parcels of the proposed Stanton site during operation would be discharged into the Stanton Storm Channel. Storm water runoff would be conveyed in accordance with the existing statewide NPDES permit for construction storm water and in compliance with existing Orange County NPDES permit for discharges to the municipal stormwater system. For more information on water quality impacts, please see the **Soil and Water Resources** section of the staff assessment.

There are no creeks, drainages, wetlands, or other aquatic resources on site. However, a cement-lined storm channel bisects the site and a storm channel transects the natural gas line route. Downstream wetlands and other aquatic resources could be impacted from storm water runoff if appropriate measures are not taken to prevent water from draining off site. Toxic materials washed from the site into the Stanton Storm Channel, which could end up in downstream sensitive marsh lands, could injure or kill wildlife and vegetation and degrade habitat. The applicant has committed to BMPs to avoid, minimize, and mitigate potential impacts from construction and operational storm water runoff (SERC 2016a). These measures are described above under “General Construction and Associated Site Clearance Impacts – Stormwater Runoff”. In addition, staff’s Condition of Certification **BIO-7** (Impact Avoidance and Minimization Measures) would require BMPs from the project SWPPP to be implemented during all phases of the proposed project to control storm water runoff. BMPs include installation of silt fencing, berms, hay bales, and detention basins to control runoff from the project area. Sediment barriers such as straw bales or silt fences would be installed to slow runoff and trap sediment where necessary. Only certified weed-free materials would be used for erosion control. With implementation of these measures and the applicant’s

commitment to the BMPs described above, potential project impacts from storm water runoff during operation would be less than significant.

Air Emissions – Nitrogen Deposition

Nitrogen deposition is the input of nitrogen oxide (NO_x) and ammonia (NH_3) derived pollutants, primarily nitric acid (HNO_3), from the atmosphere to the biosphere. Nitrogen deposition sources are primarily industrial and vehicle emissions, including power plants. Mechanisms by which nitrogen deposition can lead to impacts on sensitive species include direct toxicity, changes in species composition among native plants, and enhancement of invasive species (Fenn et al. 2003; Weiss 2006). The increased dominance and growth of invasive annual grasses is especially prevalent in low biomass vegetation communities that are naturally nitrogen-limited. Such vegetation communities that occur in the project region, which encompasses a 10-mile buffer of the Stanton project site and offsite linear facilities, include intertidal salt marshes, intertidal wetlands, freshwater marsh/wetlands, coastal dunes, chaparral, coastal sage scrub, oak woodlands, desert scrub, and annual grassland (Weiss 2006). Some of these vegetation types support critical habitat for federally-listed species, including the coastal California gnatcatcher. Refer to the “Regional Setting” subsection of this analysis for a complete description of significant ecological areas, protected areas, and critical habitat within 10 miles of the Stanton project site.

Habitat of listed threatened or endangered species (designated critical habitat) as well as sensitive natural communities as identified in CDFW’s California Natural Diversity Database (CNDDB) within a 6-mile radius of a proposed power plant project would be in the area of potential effects of nitrogen deposition from the project, if present. Energy Commission Air Quality staff has found that by the time a power plant’s air emissions have traveled this distance, concentrations of NOx and NH_3 derived pollutants become indistinguishable from background concentrations. Beyond a 6-mile radius staff would consider impacts to be less than significant. There are no sensitive natural communities, as listed by CDFW in the CNDDB, or any designated critical habitat for federally-listed species that are considered sensitive to nitrogen deposition within the 6-mile radius of the proposed Stanton project site. Therefore, nitrogen deposition impacts from the proposed project would be less than significant.

CUMULATIVE EFFECTS

Under the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR [or its substitute] 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.

The proposed Stanton site provides no habitat for special-status species, however the ruderal areas within the undeveloped portion of the site and the SCE Barre Substation

as well as adjacent ruderal areas may provide nesting habitat for birds protected under the MBTA and Fish and Game Code (Sections 3503 and 3513). The proposed Stanton site is located on partially developed and previously developed land in an industrial area without significant biological resources nearby. 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 within one mile of the Stanton project site during staff's cumulative analysis, and the proposed project impacts would not be expected to be cumulatively significant with mitigation required for effects to breeding birds and from lighting, invasive weeds, or storm water runoff (Conditions of Certification **BIO-1** through **BIO-9**).

Staff concludes that 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 development of the proposed Stanton project does not conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan because there are no applicable HCPs or NCCPs for this area (CDFW 2017b). Applicable LORS are described in **Biological Resources Table 1**. The below **Biological Resources Table 3** discusses the Stanton project's consistency with applicable LORS.

Biological Resources Table 3
Proposed Consistency with Laws, Ordinances, Regulations, and Standards

Applicable LORS	Consistency Determination	Basis for Consistency
Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.) Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Take of federally listed species as defined in the Act is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or Section 10 Habitat Conservation Plan. The administering agencies are the USFWS and National Marine Fisheries Service.	Consistency Achieved	Construction and operation of the proposed project would not result in any impacts to federally-listed species or their critical habitat.

Applicable LORS	Consistency Determination	Basis for Consistency
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.	Consistency Achieved	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists conduct pre-construction surveys and are on site during construction to ensure no activities take place within the Stanton Storm Channel. Condition of Certification **BIO-9** provides for a qualified biologist to monitor all activities pertaining to drilling under Carbon Creek Channel.
Migratory Bird Treaty Act (MBTA)(Title 16, United States Code, sections 703 through 711) Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird including nests with viable eggs). The administering agency is the USFWS.	Consistency Achieved	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists conduct pre-construction surveys and are available during construction. **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. The project owner is required to implement a WEAP (**BIO-5**) to educate workers about compliance with environmental regulations, including the MBTA.
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.	Consistency Achieved	Construction and operation of the proposed project would not result in any impacts to state listed rare, threatened, and endangered species.
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.	Consistency Achieved	Construction and operation of the proposed project would not result in any impacts to state listed rare, threatened, and endangered species.
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.	Consistency Achieved	Construction and operation of the proposed project would not result in any impacts to fully protected species.

Applicable LORS	Consistency Determination	Basis for Consistency
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.	Consistency Achieved	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists conduct pre-construction surveys and are available during construction. Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. The project owner is required to implement a WEAP (**BIO-5**) to educate workers about compliance with environmental regulations, including Fish and Game Code.
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.	Consistency Achieved	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists conduct pre-construction surveys and are on site during construction. Condition of Certification **BIO-8** provides for pre-construction nest surveys, protective buffers, and monitoring if nests are found. The project owner is required to implement a WEAP (**BIO-5**) 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.	Consistency Achieved	Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-4** ensure qualified biologists conduct pre-construction surveys and are on site during construction to ensure no activities take place within the Stanton Storm Channel. Condition of Certification **BIO-9** provides for a qualified biologist to monitor all activities pertaining to drilling under Carbon Creek Channel.

Applicable LORS	Consistency Determination	Basis for Consistency
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.	Consistency Achieved	Construction and operation of the proposed project would not result in any impacts to state rare and endangered plants on the Stanton site or along the natural gas line route.
County of Orange General Plan The Resources Element of the General Plan contains official County policies on the conservation and management of resources. The principal natural resources of concern are vegetation and wildlife habitat as well as landforms. It identifies and addresses concerns about the county's natural resources (land, air, water and plant/animal species) and establishes decision making guidelines for advancing development, maintaining, preserving and conserving these resources. It includes discussion of Orange County's Central-Coastal Natural Community Conservation Plan (NCCP)/ Habitat Conservation Plan (HCP).	Consistency Achieved	Construction and operation of the proposed project would not result in any conflicts with the General Plan Goals, Policies, or Objectives.

NOTEWORTHY PUBLIC BENEFITS

Biological resources staff concludes the public benefit of the Stanton project is that only previously disturbed vacant land as well as currently developed land would be developed and there would not be any significant impacts to sensitive habitats or species if the project is constructed with the proposed conditions of certification.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

The only comment on the **Biological Resources** section of the Preliminary Staff Assessment (PSA) was from the applicant (TN 223179, dated April 11, 2018). The applicant proposed language changes to **BIO-5** (Worker Environmental Awareness Program). Specifically, the applicant requested that the requirement to train delivery personnel and for employees to carry wallet cards be deleted as unnecessary, given the small size and highly urbanized nature of the project site. Staff considered the applicant's request and agrees with the proposed changes. The project is in an urbanized industrial park with very limited biological resource values on the site and in the surrounding area. Training of delivery personnel accessing the site from a fully improved street, and requiring employees to carry wallet cards that explain the WEAP is

not warranted in this setting. The proposed changes were discussed at the PSA workshop and staff agreed to make the suggested edits.

CONCLUSIONS

The proposed project site and offsite linear facilities as well as temporary staging and parking areas are previously disturbed and/or developed. Vegetation is limited to weedy species and landscaping. Rare plants and special-status wildlife are not expected to occur on site or along the linear facility routes; however, ruderal areas on site and nearby support common bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code (Sections 3503 and 3513). In addition, the proposed project site and offsite natural gas line route are bisected by storm channels under the jurisdiction of United States Army Corps of Engineers (USACE), Regional Water Quality Control Board, and California Department of Fish and Wildlife (CDFW). 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**. With implementation of proposed conditions of certification, compliance with LORS would be achieved and direct, indirect, and cumulative impacts would be avoided, minimized, or mitigated to less-than-significant levels.

Biological Resources Table 4
Summary of Impacts to Biological Resources from the Proposed Project

Impact	Condition of Certification	Significance Determination
CONSTRUCTION IMPACTS		
Native vegetation: removal of native vegetation	None	Less than significant
Common wildlife: disturbance and injury or mortality to common wildlife, including nesting birds	**BIO-7** limits disturbance area; **BIO-8** requires pre-construction nest surveys and impact avoidance	Less than significant with conditions of certification
Special-status plants	None	Less than significant
Special-status wildlife	None	Less than significant
Jurisdictional waters:	**SOIL&WATER-1** requires preparation of a SWPPP to control runoff and prevent contamination; **BIO-9** requires the Designated Biologist or Biological Monitor be present at all times during jack and bore drilling activities	Less than significant with conditions of certification
Noise: disturbance resulting in decreased productivity of special-status birds	**BIO-8** requires pre-construction nest surveys and impact avoidance **NOISE-6** requires restrictions on heavy equipment operations and noisy work timing and noise impact minimization measures	Less than significant with conditions of certification

Impact	Condition of Certification	Significance Determination
Lighting: disturbance resulting in altered behavior or increased predation	**VIS-4** minimizes offsite lighting	Less than significant with conditions of certification
Invasive weeds: threaten downstream restoration, destroy wildlife habitat and forage, increase soil erosion	**BIO-7** controls invasive weeds	Less than significant with conditions of certification
Storm water runoff: degradation of downstream habitat	**BIO-7** minimizes runoff **SOIL&WATER-1** requires preparation of a SWPPP to control runoff	Less than significant with conditions of certification
OPERATION IMPACTS		
Noise: disturbance resulting in mortality or decreased productivity of special-status birds and rehabilitating wildlife	**NOISE-4** requires noise reduction measures during operations	Less than significant with conditions of certification
Lighting: disturbance resulting in altered behavior or increased predation	**VIS-5** minimizes offsite lighting	Less than significant with conditions of certification
Avian collision: injury or mortality	None	Less than significant
Storm water runoff: degradation of downstream habitat	**BIO-7** minimizes runoff **SOIL&WATER-4** requires compliance with NPDES permit requirements for discharge	Less than significant with conditions of certification
Nitrogen deposition: degradation of habitat by enhancing invasive weeds	None	Less than significant

PROPOSED CONDITIONS OF CERTIFICATION

Staff proposes the following Biological Resources conditions of certification:

DESIGNATED BIOLOGIST SELECTION

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission compliance project manager (CPM) for approval.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and

3. At least one year of field experience with biological resources found in or near the project area.

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

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

If a Designated Biologist is replaced, the specified information for 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, or restoration activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;

2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;

3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;

4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect, or train and direct the site personnel how to inspect, the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm’s way;

6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

7. Respond directly to inquiries of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Reports (MCRs) and the Annual Compliance Report (ACR);

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and

10. Maintain the ability to be in regular, direct communication with representatives of California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and CPM, including notifying these agencies of dead or injured listed species and reporting special status species observations to the California Natural Diversity Database.

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

BIOLOGICAL MONITOR SELECTION

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

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

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

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

If required by the Designated Biologist and/or Biological Monitor(s) the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the construction/operation manager when to resume activities; and

3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage.

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

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

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

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

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

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting electronic media and written material is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating sensitive resources and authorized work areas;

3. Discuss federal and state laws afforded to protect the sensitive species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., federal, and state endangered species acts);

4. Place special emphasis on the known and potentially occurring bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;

5. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;

6. Present the meaning of various temporary and permanent habitat protection measures;

7. Identify whom to contact if there are further comments and questions about the material discussed in the program; and

8. Include a training acknowledgment form to be signed by each worker indicating that they received the WEAP training and shall abide by the guidelines.

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

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

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

Throughout the life of the project, the worker education program shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. The project owner will provide documentation of the dates of annual training and number of participants who complete the training in the Annual Compliance Report. During project operation, signed

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

Training acknowledge forms shall be maintained by the project owner and shall be made available to the CPM upon request.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)

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

1. All biological resource mitigation, monitoring, and compliance measures proposed by the project owner and agreed to by staff;

2. All biological resource conditions of certification identified in the Commission Decision as necessary to avoid or mitigate impacts;

3. All biological resource mitigation, monitoring, and compliance measures required in other state or federal agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Storm Water General Permit;

4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

5. All required mitigation measures for each sensitive biological resource;

6. A detailed description of measures that shall be taken to avoid or mitigate disturbances from construction and associated site clearance activities;

7. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction;

9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

10. Performance standards to be used to help decide if/when proposed mitigation and conditions are or are not successful;

11. All performance standards and remedial measures to be implemented if performance standards are not met;

12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s);

13. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and

14. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database (CNDDB) per CDFW requirements.

Verification: The project owner shall provide the BRMIMP to the CPM for review (in consultation with CDFW) and approval at least 45 days prior to start of any pre-construction site mobilization.

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.

The project owner shall notify the CPM no less than 5 working days before implementing any modifications to the approved BRMIMP to obtain CPM approval.

Any changes to the approved BRMIMP must also be approved by the CPM in consultation with appropriate agencies to ensure no conflicts exist.

Implementation of BRMIMP measures shall be reported in the monthly compliance reports by the Designated Biologist (i.e., survey results, construction activities that were monitored, species observed).

Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written Construction Closure Report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases; and which mitigation and monitoring items are still outstanding.

GENERAL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

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

1. Delineation of Project Site. 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 disturbances, vehicles, and equipment shall be confined to the flagged areas. All stakes, flagging, fencing or barriers shall be removed from the project site and vicinity of any waterbodies upon completion of project activities.

2. Escape Ramp in Trench. At the end of each work day, the Designated Biologist, Biological Monitor, and/or trained site personnel shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall have an escape ramp at each end constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees to allow any animals that may have become trapped in the trench to climb out overnight or they shall be covered completely to prevent wildlife access. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location. If trained site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they will immediately notify the Designated Biologist and/or Biological Monitor. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

3. Soil Wind and Water Erosion Control. Spoils shall not be stockpiled adjacent to any channels (i.e., Stanton Storm Channel, Carbon Creek Channel) to minimize potential for spoils to enter into these waterbodies. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants. The project owner shall keep the amount of water used for dust abatement to the minimum amount needed, and shall not allow water to form puddles. During construction, a Biological Monitor shall patrol these areas and shall take appropriate action to reduce water application rates where necessary.

4. Notification of Take, Injury, or Death of Common Wildlife Species. Site personnel shall report all inadvertent death or injuries of wildlife species to the appropriate project representative, including road kill. During construction, injured or dead animals detected by personnel in the project area shall be reported immediately to a Biological Monitor or Designated Biologist, who shall remove the carcass or injured animal promptly. During operations, the Plant Manager shall be notified who shall promptly notify the Designated Biologist to remove the carcass or injured animal. Species name, physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the compliance reports by the Designated Biologist.

   The project owner shall immediately notify the Designated Biologist or Biological Monitor if a special-status species is taken or injured at the project site, or if a special status species is otherwise found dead or injured within the vicinity of the project. The Designated Biologist or Biological Monitor shall provide initial immediate notification to the CPM as well as CDFW and/or USFWS. The initial immediate notification shall include information regarding the location of the animal and/or carcass, date and incident location, time of incident, name of the Designated Biologist or Biological Monitor(s) present, the activity that caused the take or injury, and common and scientific names of species taken or injured. Following initial notification, the project owner shall send the CPM and

CDFW and/or USFWS a written report via email within two (2) calendar days. The written report shall include the information in the initial notification and if possible provide a photograph of the species that was taken or injured, and preventative measures that will be implemented to prevent take or injury of special-status species.

5. Hazardous Waste. 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 project owner shall ensure that work shall immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. The Designated Biologist shall be informed immediately of any spills of hazardous material or wastes. Servicing of construction equipment shall take place only at designated areas. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

6. Trash Abatement and Feeding Wildlife. All general trash, food-related trash items (e.g., wrappers, cans, bottles, food scraps, cigarettes, etc.) and other human-generated debris will be stored in animal proof containers 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.

7. Firearms and Dogs. The project owner shall prohibit firearms and domestic dogs (except service dogs) from the project site, except those in the possession of authorized security personnel or local, state, or federal law enforcement officials.

8. Erosion Control Materials. Standard best management practices (BMPs) from the project Stormwater 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 creeks or channels. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into any 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**).

9. Invasive Weeds. 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;

c. Invasive non-native species shall not be used in landscaping plans and erosion control;

d. Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions.

10. Herbicides. During construction and operation, only herbicides containing a harmless dye and registered with the California Department of Pesticide Regulation (DPR) shall be used. All herbicides shall be applied in accordance with regulations set by DPR. All herbicides shall be used according to labeled instructions. Labeled instructions for the herbicide used shall be made available to the CPM upon request. No herbicide shall be applied when winds are greater than five (5) miles per hour.

11. Rodenticides and Insecticides. During construction and operation, the project owner shall not use rodenticides and/or insecticides on the project site without prior written permission from the CPM. The project owner shall not use any second generation anticoagulant rodenticide (brodifacoum, bromadiolone, difethialone, and difenacoum) on the project site. The project owner shall not use any first generation anticoagulant rodenticide (diphacinone, chlorophacinone, and warfarin) on the project site without prior written permission from the CPM.

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

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

BIO-8 Pre-construction nest surveys shall be conducted if construction work will occur from February 15 through August 31.The term “work” shall be defined as all site assessment, pre-construction activities, site mobilization, and ground disturbing construction activities. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat and substrate within the project site and any offsite facilities (e.g. generator tie line and natural gasline, worker parking areas and staging areas) and publically-accessible areas within 500 feet of the project boundary. These surveys shall include the orders *Falconiformes* and *Strigiformes* (raptors and owls). Surveys shall be conducted at appropriate nesting times and concentrate on potential roosting or perch sites. Any habitat areas adjacent to the project site but not publically accessible shall be surveyed with binoculars.

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of construction activity. One survey shall be conducted within the 3-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

3. If active nests are detected during on-site surveys, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest with fencing, flagging and/or signage, as appropriate. The size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (in coordination with CDFW and USFWS). If any nests of birds of prey are observed, these nests shall be designated an ecologically sensitive area and protected (while occupied) by a minimum 500-foot radius during project construction. Off-site special-status nests shall be mapped and monitored, but shall not be fenced. Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM in the monthly compliance reports.

4. If active nests of special-status species are detected during surveys, the Designated Biologist or Biological Monitor shall inform the CPM within one business day, and shall monitor all on-site and off-site nests at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the Designated Biologist or Biological Monitor shall immediately implement adaptive measures to reduce disturbance in coordination with the CPM. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound-dampening structures between the nest and construction activity, where possible.

5. If active nests are detected during surveys, the Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. 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. 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 shall state how impacts of any nesting birds will be avoided by citing the appropriate information from this condition of certification. The letter report/email report shall include the time, date, methods, and duration of the surveys; identity and qualifications of the surveyor(s); and a list of species observed.

7. If active nests are detected during the surveys, the reports shall include a map or aerial photo identifying the location of the nest(s), species, and shall depict the boundaries of the proposed no-disturbance buffer zone around the nest(s).

Verification: The project owner shall provide notification to the CPM, CDFW, and USFWS at least 2 weeks prior to initiating surveys; notification shall include the name and resume of the biologist(s) conducting the surveys and the timing of the surveys. Prior to the start of any pre-construction site mobilization, the project owner shall provide the CPM, CDFW, and USFWS a letter-report describing the findings of the preconstruction nest surveys. 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.

JACK AND BORE DRILLING BEST MANAGEMENT PRACTICES

BIO-9 During construction, using jack and bore drilling techniques, the Designated Biologist or Biological Monitor must be present at all times. The Designated Biologist or Biological Monitor must be allowed to monitor all activities pertaining to drilling under Carbon Creek Channel, and shall be given authority to do the following, including but not limited to:

1. visually inspect the drill path,

2. monitor the creek for evidence of frac-out or drilling fluid release,

3. examining the drilling fluid pressures and return flows,

4. approval of the drilling setup locations,

5. verifying the perimeter of the work site is adequately flagged prior to equipment setup, and

6. having the authority to halt any drilling if the operations lead to frac-out or the drilling fluid pressures and return flows drop.

Verification: The Designated Biologist or Biological Monitor must notify the CPM and CDFW (no later than the following morning of the incident, or Monday morning in the case of a weekend) in the event of frac-out. The CPM and CDFW must also be notified of any non-compliance or a halt of any jack and bore drilling operations. The project owner shall notify the CPM and CDFW of the circumstances and actions being taken to resolve the problem.

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

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CULTURAL RESOURCES

Testimony of Matthew Braun[1] and Melissa Mourkas

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Stanton Reliability Energy Center (Stanton or project) could result in significant, direct impacts to buried archaeological resources, that could also be tribal cultural resources, and that may qualify as historical or unique archaeological resources under the California Environmental Quality Act (CEQA). The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** would ensure that the applicant would be able to respond quickly and effectively in the event that archaeological resources are found buried beneath the project site during construction-related ground disturbance.

Staff's analysis of the proposed project with regard to ethnographic and historic built environment resources concludes that no ethnographic or historic built environment resources are present in the project area of analysis that qualify as historical resources under CEQA. Therefore, no ethnographic or historic built environment resources would be impacted by the construction or operation of the project.

Staff considers environmental justice populations in its analysis of the project. Staff did not identify any Native American environmental justice populations that either reside within 6 miles of the project site or that rely on any subsistence resources that could be impacted by the proposed project.

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the proposed project on cultural resources. Staff considers three broad classes of cultural resources in this assessment: prehistoric, ethnographic, and historic resources. Those cultural resources eligible for listing on the California Register of Historical Resources (CRHR) are historical resources and are further defined under state law as buildings, sites, structures, objects, areas, places, records, manuscripts, and tribal cultural resources (Cal. Code Regs., tit. 14, §§ 4852a, 5064.5(a)(3); Pub. Resources Code, §§ 5020.1(h, j), 5024.1[e][2, 4], 21074).

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

Ethnographic resources are those materials important to the heritage of a particular ethnic or cultural group, such as Native Americans, or immigrants from Africa, Europe, or Asia. They may include traditional resource collecting areas, ceremonial sites,

[1] Braun – Prehistoric and ethnographic resources; Mourkas – Historic built environment resources.

topographic features, value-imbued landscapes, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources can also be variations of natural resources and standard cultural resource types. They can be places assigned cultural significance by traditional users, such as subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes. 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 historical resources recently introduced into CEQA by Assembly Bill 52 (Stats. 2014, ch. 532). Tribal cultural resources are resources that are any of the following: sites, features, places, cultural landscapes, sacred places, or objects that are included in or determined eligible to the CRHR, or are included on a local register of historical resources as defined in Subdivision K of section 5020.1 of the Public Resources Code. Tribal cultural resources can be prehistoric, ethnographic or historic as defined above.

Historic-period resources are those materials, archaeological and built environment, 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, buildings, structures, sites, trail and road corridors, artifacts, or other evidence of historic human activity. Under federal and state requirements, historic 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) and the Energy Commission Regulations (Title 20 CCR, Appendix B (g)(2)B)) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

For the proposed project, staff provides an overview of the environmental setting and history of the project area, an inventory of the cultural resources identified in the proposed 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 impacts on historical resources from the proposed project using criteria from CEQA, or federal guidance where appropriate. The primary objective of this analysis is to ensure that all potential impacts are identified and that conditions are set forth that ensure that impacts are mitigated below the level of significance.

When historical resources are identified, staff determines whether there may be a project-related impact to those resources and the nature of that impact. If the historical resources cannot be avoided, staff recommends mitigation measures that ensure that impacts to the identified historical resources are reduced to a less-than-significant level.

[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 proposed before the Energy Commission are reviewed to ensure that the proposed facilities would comply with all applicable laws, ordinances, regulations, and standards (LORS) (Pub. Resources Code, §25525; Cal. Code Regs., tit. 20, 1744[b]).

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	Consistency Determination	Basis for Consistency
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.	With the adoption of **CUL-1** through **CUL-8** the project as proposed is consistent Public Resources Code §§5097.98(b) and (e).	Proposed conditions of certification require the property owner to coordinate with the NAHC and consult with the MLD to consider treatment options in the event Native American human remains are found on the project site.
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.	With the adoption of **CUL-1** through **CUL-8** the project as proposed is consistent Public Resources Code §5097.99.	Proposed conditions of certification call for monitoring by a qualified Cultural Resources Specialist (CRS) and Native American monitor during ground disturbing activity. All discoveries are required to be reported to the Energy Commission Compliance Project Manager (CPM).
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.	With the adoption of **CUL-1** through **CUL-8** the project as proposed is consistent Public Resources Code §7050.5.	Proposed conditions of certification call for monitoring by a qualified CRS and Native American monitor during ground disturbing activity. The CRS and Native American monitor are authorized to halt work in the event human remains are discovered and required to notify the county coroner and CPM.

Applicable LORS	Consistency Determination	Basis for Consistency
Civil Code, §1798.24		
Provides for non-disclosure of confidential information that may otherwise lead to harm of the human subject divulging confidential information.	The project as proposed would not lead to the disclosure of confidential site information maintained by any of the entities listed in Civil Code §1798.24.	Project participants who may come into contact with confidential cultural resources information are bound by confidentiality policies, standards, and formal contracts that ensure confidential cultural resource information will not be disclosed as a result of the proposed project. Any confidential information submitted to the Energy Commission is required to be submitted under Confidential Cover.
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.	The project as proposed would not lead to the disclosure of confidential site information maintained by any of the entities listed in Government Code, §6250.10.	Project participants who may come into contact with confidential cultural resources information are bound by internal confidentiality policies, standards, and formal contracts that ensure confidential cultural resource information will not be disclosed as a result of the proposed project. Any confidential information submitted to the Energy Commission is required to be submitted under Confidential Cover.
Orange County General Plan 2015		
Chapter VI, Resources Element Goal 4: Conserve open space lands needed for recreation, education, and scientific activities, as well as cultural-historic preservation.	With the adoption of **CUL-1** through **CUL-8** the project as proposed is consistent with the Orange County General Plan, Chapter VI.	Proposed conditions of certification reduce all project related impacts to a less than significant level, thereby conserving cultural resources consistent with the General Plan policies.
City of Anaheim Citywide Historic Preservation Plan 2010		
The Plan is intended to assist the City and its residents in recognizing the importance of historic resources that are located throughout Anaheim, and to provide a framework for the identification and designation of those resources.	The project is consistent with the Citywide Historic Preservation Plan.	The project would not impact historic resources identified in the plan.

SETTING

Information regarding the setting of the proposed project places the project in regional, geographical, and geological contexts. Additionally, the archaeological, ethnographic, and historic background sections provide the contexts for the evaluation for any potentially significant cultural resources within the project area of analysis (PAA).

REGIONAL SETTING

The proposed project would be located in Orange County, in the city of Stanton, California. As discussed in the application for certification (AFC), the proposed project site is located within the Peninsular Ranges geomorphic province, and more specifically the southcentral portion of the Los Angeles Basin (CGS 2002: 3). The Los Angeles Basin is a broad, northwest-plunging syncline that includes 4,200 feet of unconsolidated Pleistocene marine and non-marine sediments (Greenwood and Pridmore 2001:8). The proposed project would be located between 69 and 72 feet above mean sea level (SERC 2016a:5.2-1), in the northeast corner of the southwest corner of Section 27, Township 4 South, Range 11 West of the San Bernardino Meridian.

PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed project site is located in the inland city of Stanton. The project site is located in an industrial area, and is bordered to the south by railroad tracks, to the west and north by industrial facilities, and to the east by Dale Avenue and the Barre Substation.

Environmental Setting

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time, are central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the proposed project is located has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the project vicinity. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology. An overview is provided here for the reader, with a more detailed environmental setting in **Cultural Resources Appendix CR-1.**

Overview

The proposed project site is situated at an elevation of 69 to 72 feet above mean sea level on Quaternary-aged alluvial deposits (Qal).

The modern climate of the project vicinity is influenced by the adjacent open coastline. Local weather conditions are typically hot, dry summers and rainy, mild winters. Precipitation ranges from 10 to 50 inches, with an annual average mean temperature of 50 and 65F (SERC 2016a: 5.2-2).

Prior to extensive development and anthropization of the Los Angeles Plain, it contained sagebrush and grassland vegetation communities, with riparian forest along streams. A host of plants and animals that were sought for food and other material cultural needs lived in these habitats and are detailed more fully in **Cultural Resources Appendix CR-1**.

Geologically, the project site is situated on an alluvial plain (Qal), with soils consisting of silty to clayey sand and soft to firm sandy to clayey silts. These deposits extend to at least 51.5 feet below the ground surface (SERC 2016e:5).

Prehistoric Setting

The regional prehistoric setting presented in the AFC is primarily based on Byrd and Raab (2007) and is divided into three parts: the Early Holocene (11,500–7550 B.P.), Middle Holocene (7950–1450 B.P.), and Late Holocene (1450 B.P.–present) (SERC 2016a:5.3-2 - 5.3-4). Staff provides additional detailed information in **Cultural Resources Appendix CR-1** to contextualize the potential impacts to archaeological resources.

Ethnographic Setting

The Gabrielino people and representative tribes are the Native Americans most directly related to the project vicinity. The Gabrielino Tongva have traditionally been split into four subgroups based on the dialect of the Gabrielino Tongva language spoken: those of the Los Angeles Basin/Gabrielino proper, those of the northern mountainous area including the inland San Fernando Valley/Fernandeño, those of Santa Catalina and San Clemente islands, and those of San Nicolas Island (Harrington 1962:viii). Today, the names Gabrielino, Tongva, or Gabrielino Tongva seem to be the preferred references of the indigenous groups from the Los Angeles Basin. The name Gabrielino Tongva will be used for the purposes of this staff assessment, except when referring to specific tribal entities that identify by other names. More detailed ethnographic information is included in **Cultural Resources Appendix CR-1**.

Contemporary Tribal Entities with Cultural Affiliations

There are five Gabrielino tribal entities culturally affiliated with the project area. In addition to Gabrielino groups, the Native American Heritage Commission (NAHC) suggested contacting some of the Kumeyaay, Luiseno, and Juaneno groups (Totton 2016). In an effort to conduct a thorough Native American consultation process, staff supplemented the list provided by the NAHC to include all Kumeyaay (eight), Luiseno (seven), and Juaneno (two) tribal entities. Of these 22 groups, 13 are federally recognized tribes, and are indicated with an asterisk in **Cultural Resources Table 2** below. However, the Energy Commission consults with all tribes on the list provided by the NAHC, regardless of federal status. The tribal entities are listed below and further described in **Cultural Resources Appendix CR-1**.

Cultural Resources Table 2
Native American Groups Contacted by Staff

Tribe	Cultural Affiliation
Campo Kumeyaay Nation*	Kumeyaay
Ewiiaapaayp Band of Kumeyaay Indians	Kumeyaay
Gabrielino Band of Mission Indians Of California	Gabrielino
Gabrieleno/Tongva San Gabriel Band of Mission	Gabrielino
Gabrielino Tongva Indians of California	Gabrielino
Gabrielino Tongva Nation	Gabrielino
Jamul Indian Village*	Kumeyaay
Juaneno Band of Mission Indians Acjachemen Nation	Juaneno
Juaneno Band of Mission Indians	Juaneno
La Jolla Band of Luiseno Indians*	Luiseno
Manzanita Band of Kumeyaay Nation*	Kumeyaay
Mesa Grande Band of Mission Indians*	Kumeyaay
Pala Band of Mission Indians*	Luiseno and Cupeno
Pauma Band of Luiseno Indians*	Luiseno
Pechanga Band of Luiseno Indians of the Pechanga Reservation*	Luiseno
Rincon Band of Luiseno Indians*	Luiseno
San Luis Rey Band of Mission Indians	Luiseno
San Pasqual Band of Diegueno Mission Indians*	Kumeyaay
Soboba Band of Luiseno Indians*	Luiseno and Cahuilla
Sycuan Band of the Kumeyaay Nation*	Kumeyaay
Tongva Ancestral Territorial Tribal Nation	Gabrielino
Viejas Band of Mission Indians of the Viejas Reservation*	Kumeyaay

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). The Spanish built 21 missions in California and established a series of fortified pueblos. The Mexican Period was characterized by land grants and ranchos awarded by Mexican Governor Juan Bautista Alvarado. Pasture lands were divided among the missions and beneficiaries who were awarded land grants by the Spanish and Mexican governors of Alta California. The early American Period in this region involved ranching and subsistence agriculture, later giving way to vineyards, citrus, and other forms of intensive agriculture. Following the first and second world wars, Southern California emerged as a major industrial metropolis. A more detailed discussion of the historic setting 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 would make such resources eligible to the CRHR. Those cultural resources eligible to the CRHR are called historical resources. The evaluations then influence the analysis of potential impacts to the historical resources and the mitigation that may be required to ameliorate any such impacts.

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

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

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

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, or 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 significance of an impact depends on:

- the historical resource(s) affected;
- the specific historical significances of any potentially impacted historical resource(s);
- how any historical resource(s) significance is manifested physically and perceptually;
- appraisals of those aspects of any historical resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- how much the impact will change historical resource integrity appraisals.

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

California Native American Tribes, Lead Agency Tribal Consultation Responsibilities, and Tribal Cultural Resources

Assembly Bill 52 (AB 52) amended CEQA to define, 1) California Native American tribes, 2) lead agency responsibilities to consult with California Native American tribes, and 3) tribal cultural resources. "California Native American tribe" means a "Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission [NAHC] for the purposes of Chapter 905 of the Statutes of 2004" (Pub. Resources Code, § 21073). Lead agencies implementing CEQA are responsible to conduct tribal consultation with California Native American tribes about tribal cultural resources within specific time frames, observant of tribal confidentiality,

and if tribal cultural resources could be impacted by project implementation, are to exhaust the consultation to points of agreement or termination.

Tribal cultural resources are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
   a. Included or determined to be eligible for inclusion in the CRHR.
   b. Included in a local register of historical resources as defined in the Public Resources Code, section 5020.1(k).
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in the Public Resources Code, section 5024.1(c). In applying the aforesaid criteria, the lead agency shall consider the significance of the resource to a California Native American tribe. (Pub. Resources Code, § 21074[a].)

Consultation with Native American tribes is an iterative and nuanced process, and the assignment of cultural value to a historical resource is best accomplished through a meaningful consultation effort. Consultation often focuses on methods and means by which impacts from a proposed project can be reduced to a less than significant level. A comprehensive mitigation and monitoring program is an important component of reducing impacts to archaeological and tribal cultural resources, and including a Native American monitor as part of this program is critical because of their “expertise concerning their tribal cultural resources” (Pub. Resources Code, §21080.3.1).

A cultural landscape that meets the criteria of Public Resources Code, section 21074(a), is a tribal cultural resource to the extent that the landscape is geographically defined in terms of its size and scope (Pub. Resources Code, § 21074[b]).

Historical resources, unique archaeological resources, and non-unique archaeological resources, as defined at Public Resources Code, sections 21084.1, 21083.2(g), and 21083.2(h) may also be a tribal cultural resource if they conform to the criteria of Public Resources Code, section 21074(a), two paragraphs above.

This document, therefore, assesses the proposed project’s impacts on historical resources, unique archaeological resources, and tribal cultural resources.

AB 52 also amended CEQA to state that a project with an impact that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code, § 21084.2).

HISTORICAL RESOURCES INVENTORY

The development of an inventory of historical resources in and near the proposed project area is the requisite first step in the assessment of whether the project might, under Public Resources Code, section 21084.1, cause a substantial adverse change in the significance of a historical resource, and could therefore have a significant effect on the environment. The effort to develop the inventory involved conducting a sequence of

investigations that included doing background research, consulting with California Native American tribes, 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 staff uses to define the geographic area in which the proposed project has the potential to affect cultural resources. The effects that a project may have on historical resources can be immediate, further removed in time, or cumulative. Impacts may be physical, visual, auditory, or olfactory in character. The resultant PAAs may be contiguous, dis-contiguous or overlapping. PAAs may include the project area, which would be the site of the proposed plant (project site), the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary facilities, in addition to one or several dis-contiguous areas where the project could potentially affect cultural resources.

Staff defines the prehistoric PAA as comprising (a) the proposed project site, the northern natural gas pipeline, and the generator tie line and a one-mile radius (**Cultural Resources Figure 1**). The built-environment (architectural) PAA is defined as the project site and the area within a one-parcel radius around the proposed project site(**Cultural Resources Figure 2**).

For ethnographic resources, the area of analysis is expanded to take into account sacred sites, traditional cultural properties (places), and larger areas such as ethnographic landscapes that can be more encompassing, including viewsheds that contribute to the historical significance of such cultural resources. The NAHC assists project-specific cultural resources consultants and agency staff in identifying these resources, and consultation with California Native American tribes and other ethnic or community groups, which may contribute to defining the area of analysis.

The PAA used by staff to identify ethnographic resources included the area from the Santa Ana River west to the San Gabriel River, north to the Coyote Hills and south to the Pacific Ocean. The basis for this area of analysis is information provided by McCawley (1996: 25) who suggests inland Luiseno, and by proxy Gabrielino communities, maintained an area of about 30 square miles, with a primary settlement, and a variety of hunting and gathering location, ritual areas, and other special-use areas (**Cultural Resources Figure 3**).

Background Research

The background research for the present analysis employs information that the project applicant and Energy Commission staff gathered from literature and record searches, research, site visits and information that staff obtained as a result of consultation with other entities. The purpose of the background information is to help formulate the initial cultural resources inventory for the present analysis, to identify information gaps, and to inform the design and the interpretation of the field research that will serve to complete the inventory.

Literature Review and Records Search

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

Staff also examined ethnographic sources concerning the Gabrielino and nearby Native American groups such as the Luiseno and Juaneno to ascertain any pertinent information regarding potential ethnographic resources in the PAA. Staff also examined prehistoric and historic literature to supplement their analysis.

Methods and Results

CH2M, the cultural resources consultant to the applicant, requested a records search from the SCCIC for the proposed project. The records search covered the proposed project site and a one-mile radius surrounding it. The records search conducted by SCCIC staff included “a review of all recorded archaeological sites and all known cultural resource survey and excavation reports. Other sources examined included the NRHP, the CRHR, California Historical Landmarks, and California Points of Historical Interest. State listings were consulted for the presence of historic buildings, structures, landmarks, points of historical interest, and other cultural resources” (SERC 2016a: 5.3-13). Staff also consulted the City of Anaheim’s Citywide Historic Preservation Plan and List of Historic Structures.

CH2M also examined historic maps and online historic aerials to determine if any structures located within the PAA are 45 years or older. Aerial photos from 1953, 1963, 1972, and 1980 were looked at online, and CH2M visited the city of Stanton’s planning department to obtain aerials from 1938 and 1947.

The literature review and records search indicate that 13 previous cultural resource studies have been conducted in the records search area; of these, two cultural resource studies were conducted within the project’s archaeological, ethnographic, and built environment PAA. The records search revealed that there were no previously identified cultural resources on the proposed project site. Additionally, a total of 21 cultural resources have been previously recorded in the records search area (see **Cultural Resources Table 3**).

Cultural Resources Table 3
Literature Review Results within 1 Mile of Stanton Reliability Energy Center

Resource Identifier	Address	Site Components	Date Recorded-Updated	NRHP/CRHR Eligibility Findings	Location relative to Stanton Energy Center
P-30-176210	1228 South Beach Boulevard	Hobby City – Gems and Opals Shop	December, 2005	Not eligible	~0.6 miles
P-30-176811	1230 South Beach Boulevard	Hobby City – Stamps and Coins Shop	December 2005	Not eligible	~0.6 miles
P-30-176812	1238 South Beach Boulevard	Hobby City	January 2006	Not eligible	~0.6 miles
P-30-176813	1240 South Beach Boulevard	Hobby City – The Party Tree/The Bear Tree Shop	June 2006	Not eligible	~0.6 miles
P-30-176814	1238-J South Beach Boulevard	Hobby City – Sunshine Dollhouse and Miniatures Shop	January 2006	Not eligible	~0.6 miles
P-30-176815	1238-D South Beach Boulevard	Hobby City – Royal Antiques Shop	January 2006	Not eligible	~0.6 miles
P-30-176816	1238-A South Beach Boulevard	Hobby City – Prestige Hobbies	January 2006	Not eligible	~0.6 miles
P-30-176817	1238-C South Beach Boulevard	Hobby City – Sports Card Dugout	January 2006	Not eligible	~0.6 miles
P-30-176818	1238-G South Beach Boulevard	Hobby City – Deco Facil	January 2006	Not eligible	~0.6 miles
P-30-176819	1238 South Beach Boulevard	Hobby City – The Indian Store	January 2006	Not eligible	~0.6 miles
P-30-176820	1238-K South Beach Boulevard	Hobby City – Doll and Toy Museum	January 2006	Eligible for listing on the NRHP and the CRHR	~0.6 miles
P-30-176821	8041 Starr Street	Residence adapted for theme park	January 2006	Not eligible	~0.6 miles
P-30-176822	8042 Starr Street	Craftsman residence	January 2006	Not eligible	~0.6 miles
P-30-176823	8062 Starr Street	Residence	January 2006	Not eligible	~0.6 miles
P-30-176824	8081 Starr Street, Building L	Hobby City – Building L	January 2006	Not eligible	~0.6 miles
P-30-176825	8082 Starr Street	Modern style residence	January 2006	Not eligible	~0.6 miles

Resource Identifier	Address	Site Components	Date Recorded-Updated	NRHP/CRHR Eligibility Findings	Location relative to Stanton Energy Center
P-30-176826	8091-O Starr Street	Spanish Colonial Revival style residence, now Hobby City	December 2005	Not eligible	~0.6 miles
P-30-176827	8091-B Starr Street	Ranch style residence, now Hobby City Reptiles Shop	January 2006	Not eligible	~0.6 miles
P-30-176828	8091-E, F Starr Street	Children's Living Nature Museum	January 2006	Not eligible	~0.6 miles
P-30-176829	8101 Starr Street	Ansdell Piano	January 2006	Not eligible	~0.6 miles
P-30-176830	8111 Starr Street	Spanish Colonial Revival style residence	January 2006	Not eligible	~0.6 miles
P-30-176831	1234 South Beach Boulevard	Hobby City – Cabbage Patch Adoption Center, Bldg. C	January 2006	Not eligible	~0.6 miles

Additional Literature Review

Staff conducted additional research at the Energy Commission in-house library through inter-library loan services, California History Room of the California State Library in Sacramento, as well as consulted the reports contained in the applicant's records searches (SERC 2016f). The purpose of this research was to obtain an understanding of the natural and cultural development of the land in and around the PAA, identify locations of potential historic built environment, archaeological resources, and ethnographic resources, and have a partial, chronological record of disturbances in the PAA. All consulted historic maps are presented in **Cultural Resources Appendix CR-1**.

Through research, staff identified additional built environment historical resources located within the literature search boundary for the proposed gas line, which extends north into the City of Anaheim. The City of Anaheim maintains a listing of historical resources within the city (Anaheim 2016) as part of its Citywide Historic Preservation Plan (Anaheim 2010). The historical resources fall into three categories: Contributors to one of the city's four historic districts, Citywide Historically Significant Structures, and Citywide Structures of Historical Interest. None of the newly identified historical resources fall into the city's four historic districts, but instead fall into the latter two categories and are summarized below.

City of Anaheim Historically Significant Structures

Historically Significant Structures are individually eligible properties outside of the city's historic districts. They meet eligibility criteria very similar to CRHR Criteria 1, 2, and 3 and are considered Qualified Historical Structures (Anaheim 2016, p. 46). The following residential building is listed as a Historically Significant Structure:

- 717 S. Dale Avenue (1924)

City of Anaheim Citywide Structures of Historical Interest

The properties on this list are good examples of an identifiable style and may be associated with the residential, institutional, industrial, or commercial development of Anaheim or the region. The following residential buildings are Structures of Historical Interest but are not Qualified Historical Structures (Anaheim 2016, p. 48):

- 801 S. Dale Avenue (1917)
- 807 S. Dale Avenue (1927)
- 2820 W. Orange Avenue (1912)

Native American Consultation

Methods

The Governor's Executive Order B-10-11, executed on September 19, 2011, directs state agencies to engage in meaningful consultation with California Indian Tribes on matters that may affect tribal communities. The Energy Commission adopted a Tribal Consultation Policy on December 10, 2014. The Energy Commission Siting Regulations require applicants to contact the NAHC for information on Native American sacred sites and a list of Native Americans interested in the project vicinity. The applicant is then required to notify those Native Americans on the NAHC's list about the project and include a copy of all correspondence with the NAHC and Native Americans, including any written responses received, as well as a written summary of any oral responses in the AFC (Cal. Code Regs., tit. 20, §1704[b][2], Appendix B[g][2][D]). Recent amendments to CEQA (Assembly Bill 52) require CEQA lead agencies to conduct tribal consultations in very specific ways.

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 California Native American tribes that have expressed an interest in being contacted about projects proposed in specific tribally-affiliated areas.

Results

In an effort to conduct an independent analysis of ethnographic resources, staff also requested information from the NAHC on the presence of sacred lands in the vicinity of the proposed project, as well as a list of California Native American tribes to whom inquiries should be sent to identify both additional cultural resources and any concerns they may have about the proposed project.

Staff contacted the NAHC on October 27, 2016 and requested a search of the Sacred Lands File and a California Native American tribe contacts list for the proposed project. The NAHC responded November 10, 2016 with a list of California Native American tribes 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 proposed project site. The Energy Commission Executive Director deemed the AFC for the proposed project data adequate on March 9, 2017 and staff sent letters to all of the NAHC-listed tribes, and additional culturally-affiliated California Native American tribes not on the NAHC list on March 21, 2017. The letters and emails sent to tribes (CEC 2017c) invited them to comment on the proposed project and offered to hold face-to-face consultation meetings if any were requested. An email was received from one group on March 23, 2017, indicating interest in the project and a request that the depth of disturbance of project construction be obtained. A letter was received from a different tribe indicating the project is out of their culturally-affiliated area. Follow-up phone calls were made with all groups from whom staff did not receive a response, but as of publication of the Final Staff Assessment (FSA) staff has not received any additional responses.

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**, which shows population based on race and ethnicity, and **Environmental Justice Table 3**, which displays population based on poverty, indicate that an environmental justice population does exist within a six-mile buffer of the proposed project area (see the **Environmental Justice** section of this document for a discussion of methods and composition of the environmental justice population). Staff also reviewed the ethnographic and historical literature to determine whether any environmental justice populations use or reside in the project area. Staff concluded that because there are no known currently used subsistence areas that could be impacted by the proposed project, Native Americans are not considered an environmental justice population for this project.

These efforts are documented in the “Ethnographic Setting” and “Native American Consultation” subsections, which can be found in **Cultural Resources Appendix CR-1**.

Cultural Resources Distribution Models

One critical use of information collected during the background research for a cultural resources analysis is to inform the design and the interpretation of the field research that will complete the cultural resources inventory for the analysis. The background research for the present analysis of the proposed project within the PAA was conducted for the AFC (SERC 2016a). 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. These models help gauge the degree to which investigation results reflect the actual population of archaeological, ethnographic, and built-environment resources in the PAA. Such models also provide important contexts for the ultimate interpretation of the results of those investigations.

Models for predicting the distribution of prehistoric, ethnographic, and historic resources are developed here and are based upon information in the “Environmental Setting,” “Prehistoric Setting,” “Ethnographic Setting,” and “Historic Setting” subsections of **Cultural Resources Appendix CR-1**, in addition to the information in the “Background Research” subsection of **Cultural Resources Appendix CR-1**. The discussions in the “Interpretation of Results” subsection below also employ the models.

Model for Predicting Prehistoric Resources

The analysis of the information in the “Environmental Setting,” “Prehistoric Setting,” and “Background Research” subsections of the **Cultural Resources Appendix CR-1** leads to the conclusion that the likelihood of prehistoric deposits across the surface of the PAA is low-moderate and subsurface prehistoric deposits could be present in the PAA.

The applicant’s archaeologist stated that “[g]iven the lack of cultural resources in the area, the lack of access to water and no archaeologically sensitive features, and the scale and scope of previous ground disturbance in the area, the sensitivity of the underlying soils is considered low” (SERC 2016a:5.3-18). Staff disagrees with this assessment, in particular the claim that an absence of previously recorded cultural resources indicates the sensitivity of buried cultural resources at the project site. Staff concludes based on the available information that there is a moderate potential for encountering buried archaeological resources for the reasons stated below.

Despite the low-moderate potential to identify prehistoric archaeological resources on the surface of the archaeological component of the PAA, staff hypothesizes that prehistoric archaeological resources could be found below the present ground surface in those areas not previously disturbed by the drainage channel that crosses the site.

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, and
- the nature of past human activities in the area.

The archaeological PAA is located on Holocene-aged alluvium deposited by the now-channelized Santa Ana River and San Gabriel River. These deposits extend to a depth of about 75 feet (at least 51.5 feet in the project area) and consist primarily of silts, sands, and gravels (SERC 2016e: 4). Prior to the rivers' channelization they meandered across the Los Angeles Plain. While the area near the proposed project is not currently close to any water sources, during the past 10,000 years of human occupation in Orange County those water courses very likely were, at times, much closer than at present.

The applicant's archaeologist stated that "[m]ost of the sediment [in the proposed project area] appears to be fill" (SERC 2016a: 5.3-17). However, borings taken by a geologist for the applicant indicate that five of the six borings encountered alluvial soils immediately, and only 1 boring on the west side of the storm channel encountered fill between 0 to 2 feet below the ground surface (SERC 2016e: Appendix A). The lack of documented fill and presence of extensive alluvium of the appropriate age and depositional nature to preserve archaeological remains, suggests to staff that there is a moderate potential to encounter subsurface deposits during ground-disturbing activities.

Model for Predicting Ethnographic Resources

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

In addition, ethnography has merits of its own by providing information concerning ethnographic resources that tend to encompass physical places, areas, or elements and attributes of a place or area. Ethnographic resources have overlap and affinity to historic preservation property types referred to as cultural landscapes, sacred sites, heritage resources, or historical resources that are objects, features, sites, places, areas or anything considered by affiliated tribal entities to be tribal cultural resources. There is notable overlap in terminology when referring to ethnographic resources. Studies that focus on specific ethnographic resource types may also take on names such as ethnogeography, ethnobotany, ethnozoology, ethnosemantics, ethnomusicology, etc.

While several definitions of ethnographic resources can be found in historic preservation literature, the National Park Service (NPS) provides the most succinct and commonly used definition (NPS 2007: Chapter 10):

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

Ethnographic Methods

Ethnographic methods, when applied to projects of limited size and scope involve four steps.[3]

Step 1 involves reviewing the project description and mapped project location and, based upon the geographic and environmental setting, formulating 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., online sources), 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 Guiding Research Domains were developed.

- The Gabrielino village of *Hotuuknga* is located on maps (McCawley 1996:56) in the vicinity of Anaheim, and *Pasbenga* in the vicinity of Santa Ana. Research the location and any information regarding these village sites.
- Research contemporary Gabrielino connections to prehistoric sites near the project site and around the city of Stanton.

[3] See Pelto 2013, Chapter 16 for an overview of applied ethnographic methods for conducting focused inquiry conducted in limited timeframes.

As documented in the “Native American Consultation” subsection, staff made efforts to make preliminary contact with Native Americans affiliated with the project area.

Interviews

Staff did not complete any interviews for inclusion in the FSA.

Archival Research

Staff made efforts to seek, obtain, and assess culturally relevant information from various archival sources. Information specifically sought related to *Hotuukngа* and *Pasbenga*, and the relationship between these villages and other archaeological sites in the vicinity of the proposed project. The California History Room of the California State Library, located in Sacramento, was also used for retrieving ethnographic information.

Field Visit

Ethnographic staff visited the area around the proposed project on March 27, 2017. Staff’s visual observation of the project site and vicinity did not result in the field identification of potential ethnographic resources because the project site was fenced off, and because the general area is industrial.

Ethnographic Method Constraints

The city of Stanton, and Orange County more generally, have experienced rapid development over the past 100 years that, coupled with the older Spanish and Mexican occupations, pushed Gabrielino people out of their traditional areas, often resulting in the loss of the knowledge of these places. This context causes constraints to the employment of common ethnographic methods, as described above.

Model of Historic Resources

Historic resources are divided into two types: historic archaeology and built environment.

Historic Archaeology and Built Environment Model

The analysis of the information in the “Environmental Setting” and “Background Research” subsections of this section; and the “Historic Setting” section of the **Cultural Resources Appendix CR-1**, leads to the conclusion that historic archaeological deposits are unlikely across the surface of the PAA and there is a low potential for subsurface historic archaeological deposits as well.

The primary historic land uses in the vicinity of the proposed project include agricultural and industrial uses. Thus, potential buried historic archaeological resources in the PAA are expected to consist of refuse deposits associated with domestic, railroad, and industrial disposal. The Historic Setting, included in **Cultural Resources Appendix CR-1,** is used by staff to interpret and evaluate extant buildings and structures within the PAA to determine their potential historic significance, integrity, and impacts.

Cultural Resources Inventory Fieldwork

The field efforts to identify cultural resources in the PAA consist of the applicant's pedestrian archaeological and historic built-environment surveys, archaeological, built-environment, monitoring reports for other projects in the PAA, and staff's field visits to the proposed project site and vicinity. On the basis of the applicant's background research for the present analysis, staff investigations and the results of the field efforts that are presently available, the total cultural resources inventory for the PAA includes five built-environment resources.

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

Pedestrian Archaeological Surveys

Methods

As stated in the AFC, an archaeologist, meeting the Secretary of the Interior Standards for Archeology, surveyed the project site on September 13, 2016. The surface of the proposed project site consisted of previously disturbed agricultural sediments and road bed material. Surface visibility was excellent in the area of proposed generation; the east side of the project area was never developed and the west side was graded to about two feet below the ground surface. The proposed natural gas line and transmission line corridors are located in areas that are paved over or landscaped, thus there was no ground surface visibility in these areas (SERC 2016a:5.3-17-18).

Staff requested that the applicant also conduct a pedestrian survey for built-environment, prehistoric, historic, and ethnographic resources of the proposed Staging Area B (CEC 2017d:2). The archaeologist for the applicant conducted a survey of the area on August 7, 2017. Ground surface visibility of the proposed project area was excellent and the archaeologist did not record any additional cultural resources. (SERC 2017d: 5).

Results

No surficial prehistoric or historic resources were identified during either of the applicant's pedestrian survey efforts.

Historic Built Environment Survey

Methods

As stated in the AFC, a historic built environment survey of the built environment PAA was conducted on September 14, 2016, by Amy McCarthy-Reid, a historian meeting the Secretary of the Interior's professional qualifications standards for Architectural History. The applicant surveyed a one-parcel buffer around the project site. USGS topographic maps and historic aerial photographs guided the survey effort to determine which buildings were 45-years or older. Following a determination of what extant buildings were present within the one-parcel PAA, the applicant recorded these resources on Department of Recreation (DPR) 523 forms and included within the **AFC Cultural Resources Confidential Appendix (SERC 2016b: 5.3-18) (SERC 2016f: 5.3B-Attachment B).**

Results

Built environment staff reviewed the AFC and confidential cultural resources appendices (SERC 2016b and SERC 2016f), associated cultural resources documents. Built environment staff toured the project site on March 27, 2017 and conducted a reconnaissance survey of the PAA the same day. Five properties identified by the applicant within the PAA were investigated. Cultural resources staff also visited the Hobby City complex and photographed each building. While Hobby City is beyond the one-parcel PAA, the previous evaluation, provided as part of the applicant's records search, did not provide staff sufficient information to assess current status of the resources. Built environment staff identified a total of five properties of historic age (45-years or older) within the PAA. These are listed in **Cultural Resources Table 4.**

Cultural Resources Table 4
Newly Recorded Cultural Resources within the PAA

Address	Site Components	Year Constructed	NRHP/CRHR Eligibility	Location relative to Stanton Energy Center
8230 Pacific Street	Concrete lined storm drain	c. 1960	Not eligible	Within project site
10680 Fern Avenue	Two related buildings on same parcel	c. 1960	Not Eligible	Adjacent to project site
Multiple	Transmission towers	c. 1920	Not eligible	Within project site
Southern Pacific Railroad	Rail line	c. 1890	Not eligible	Immediately south of project site
8662 Cerritos Ave	Barre Substation	1939-1940	Not eligible	~0.2 miles

Cultural Resource Descriptions and Eligibility Evaluations

Staff has identified five cultural resources in the PAA, all of which are built environment resources.

Prehistoric Resources

No prehistoric resources were identified.

Ethnographic Resources

No ethnographic resources were identified.

Built Environment Resources

As noted above within the survey and research discussion, staff identified five historic-period built environment resources within the PAA. These are listed in **Cultural Resource Table 4**. All five resources are industrial properties. The applicant recorded and evaluated the historic significance of five of the historic-age built environment resources within the PAA: the storm drain and associated access road (ca. 1965), two transmission towers (ca. 1920), the two associated industrial buildings at 10680 Fern Avenue (ca. 1965), a segment of the Southern Pacific Railroad (ca. 1890), and the Barre Substation (1939).

Staff concludes that all five of the resources evaluated by the applicant are ineligible for listing on the California Register of Historical Resources (CRHR) under Criteria 1–4, and therefore any potential project impact to these resources would be less than significant. A brief discussion of the five resources follows.

Storm Drain

The concrete lined storm drain is visible on 1965 USGS topographic maps and dates from the historic era. While the feature is over 50 years old, it does not appear to meet any of the criteria for listing on the CRHR. The structure appears to be part of an integrated storm water management plan. The structure is not associated with the flood event of 1938, and otherwise does not appear eligible under CRHR Criterion 1. No important individual architect or engineer is associated with the structure, making it ineligible under CRHR Criterion 2. The channel construction is utilitarian and the channel does not contain any artistic, architectural, or design value making it ineligible under CRHR Criterion 3. Under CRHR Criterion 4, the storm drain would need to possess some kind of important information about our history, which it does not. Therefore, based upon the Historical Resource Evaluation (Report of Findings) filed for this AFC (SERC 2016a, SERC 2016f), and staff's own independent research and analysis, staff concludes that the storm drain and associated access road are not historical resources for the purposes of CEQA. These features do not meet the criteria for listing in the CRHR.

Transmission Towers

Two late 1960s lattice-type steel transmission towers located on the project site are part of the Southern California Edison (SCE) Greater Los Angeles power delivery grid. According to SCE's Historic-Era Electrical Infrastructure Management Program, lattice towers from this period are associated with SCE's high-voltage transmission system (Becker et. al. 2015: 87). SCE has identified 10 high-voltage transmission lines with lattice towers that fall within the period of significance (1965-1970), and are potentially eligible for listing on the CRHR. All the lines identified by SCE as potentially eligible are part of SCE's long-distance, 500kV transmission system (Becker et. al. 2015: 51). The two lattice towers on the site are associated with a transmission line that was not identified as potentially eligible by SCE, and not part of the 500kV system, which were constructed elsewhere in Southern California (Becker et. al., 2015: 51). Based on the

historic context and significance criteria provided by SCE, staff concludes the lattice towers are not eligible for listing on the CRHR under criteria 1 through 4. Additionally, the AFC provided an evaluation which noted that the surrounding community and connecting substation were well established by the time the towers were constructed (CRHR Criterion 1); and the towers are a common type in widespread use since the 1920s and are not distinctive (CRHR Criterion 3). Based upon the Historical Resource Evaluation (Report of Findings) filed for this AFC (SERC 2016a, SERC 2016f), SCE's Historic-Era Infrastructure Management Program, and staff's own independent research and analysis, staff concludes that the SCE lattice towers on the project site are not historical resources for the purposes of CEQA. These structures do not meet the criteria for listing in the CRHR.

10680 Fern Avenue

Two buildings are located at 10680 Fern Avenue, a main building and associated light industrial building. Based on aerial imagery, the buildings appear to be constructed around 1950, and are likely associated with the post-World War II (WWII) development of Orange County but are not important examples of that historical trend (CRHR Criterion 1). The buildings are not associated with an important individual who has made an important contribution to the city of Stanton, Orange County, or Southern California (CRHR Criterion 2). Both buildings display modest architectural features of the mid-century period, but would not be considered fine examples of the period's various styles. The buildings were designed by architect John J. Kewell, who practiced in Southern California from the 1930s to the 1960s. Kewell would not be considered a master architect, and was primarily associated with small subdivisions and modest shopping centers (CRHR Criterion 3). Finally, buildings of this type are unlikely to contain information important to understanding California history or prehistory (CRHR Criterion 4). Based upon the Historical Resource Evaluation (Report of Findings) filed for this AFC (SERC 2016a, SERC 2016f), and staff's own independent research and analysis, staff concludes that the two buildings at 10680 Fern Avenue are not historical resources for the purposes of CEQA. These resources do not meet the criteria for listing in CRHR.

Southern Pacific Railroad Segment

The section of the Southern Pacific Railroad, Los Alamitos Branch line was constructed in 1899 to serve the sugar beet industry, which was very important to the development of the area. The AFC does not go into great detail regarding the eligibility of this segment of track. Therefore, staff presumes the resource is important for its association with the growth and development of Orange County agriculture. However, in order to be considered a historical resource for the purposes of CEQA and eligible for listing on the CRHR, the track must possess both significance and integrity. Seven qualities comprise historic integrity: location, design, setting, materials, workmanship, feeling, and association. The spur line maintains only its integrity of location. The segment of track near the project site has been modernized; meanwhile, other segments and branches of the Los Alamitos line have been abandoned. The system lacks railroad service buildings (i.e. stations, equipment sheds, coal storage facilities, and grade crossings) which are typically associated with railroad infrastructure from this period. Additionally, in some areas the tracks themselves have been removed from the ties, or ties covered with asphalt or concrete. These changes have significantly altered the system's integrity

of design, materials, and workmanship. The historic integrity of setting, feeling, and association has been significantly impaired by the transformation of the area in the post-WWII period from agriculture to its current industrial and residential uses. The industrial nature of the project area, ongoing since the 1950s, is very different from the 1890s when small farms and orchards dominated the landscape. Based upon the Historical Resource Evaluation (Report of Findings) filed for this AFC (SERC 2016a, SERC 2016f), and staff's own independent research and analysis, staff concludes that this segment of the Southern Pacific Railroad line is not a historical resource for the purposes of CEQA due primarily to its lack of historic integrity. This linear feature does not meet the criteria for listing in the CRHR.

Barre Substation

The Historical Resource Evaluation (Report of Findings) filed for this AFC (SERC 2016a, SERC 2016f) states that the Barre Substation was inaccessible and not evaluated. Staff requested the applicant make additional efforts to evaluate the resource during the discovery process. The applicant provided an evaluation of the property to staff on November 14, 2017. The substation was constructed in 1939 by Stone and Webster Engineering Corporation to receive power from Southern California Edison's Boulder Dam 220kV system. The facility was evaluated by the applicant using guidance provided by SCE using the *Historic Era Electrical Infrastructure Management Program* (Becker, et al.: 2015). The SCE program document is used by the power company to evaluate their electrical generation infrastructure using the criteria for listing on the National Register of Historic Places (NRHP) and the CRHR. Pursuant to the thematic classes of eligibility set forth in the SCE infrastructure management program, the Barre Substation lacks the requisite elements to be considered a historical resource for listing on the NRHP or the CRHR under any of the four criteria. Staff agrees with the applicant's evaluation and does not consider the Barre Substation a historical resource for the purposes of CEQA.

Historic Age Structures within the PAA and One Mile Literature Search Area

Staff investigated historic age built environment resources in the PAA (see **Cultural Resources Figure 2**) and the one-mile literature search area and has not identified any resources considered historical resources under CEQA, with the exception of the Hobby City Doll and Toy Museum located at 1238-K South Beach Boulevard, which was previously identified as eligible for listing on the NRHP and the CRHR (SERC 2016f: P-30-176820) and the residential building at 717 S. Dale Avenue, which is on the City of Anaheim's Historically Significant Structures List (Anaheim 2016).

California Register of Historical Resources Eligibility

Staff recommends that none of the built environment resources identified within the PAA during the course of the AFC-process are eligible for listing in the CRHR. In the literature search area, the Hobby City Doll and Toy Museum is the only resource identified as eligible for listing in the CRHR. No other resources identified within the built environment PAA and literature search area meet the CRHR criteria (i.e., are considered historical resources).

Interpretation of Results

Model of Prehistoric and Historic Archaeological Resources

The AFC and associated cultural resources documentation suggest that the PAA has a low potential to contain prehistoric and historic archaeological resources on the ground surface because of the degree of disturbance, paucity of previously recorded resources, and a lack of nearby water sources. These expectations were borne out by the cultural resources inventory described in this document; however, it should be noted that the lack of surface manifestations of an archaeological site does not preclude subsurface deposits.

The AFC and associated cultural resource documentation states that buried archaeological resource potential is low based on the same rationale for a low potential of surface deposits, i.e., degree of disturbance, paucity of previously recorded resources, and a lack of nearby water sources. Staff disagrees with this assessment, and suggests that the geomorphological character of the proposed project site, in particular the east portion of the site, retains a moderate potential for containing buried archaeological resources. The west side of the site has a low-moderate probability of containing buried resources because of grading that has disturbed the top two feet of the ground surface. Staff agrees with the applicant's assessment that the natural gas and transmission line corridors are unlikely to contain buried archaeological resources because these linear portions of the project would be installed in existing, previously disturbed rights-of-way.

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, oily sand remediation, or demolition of overlying structures. Construction can have direct impacts on historic standing structures when those structures must be demolished or removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with adjacent historic structures and the related setting, feeling and association. New structures might also produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

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

Ground disturbance accompanying construction at the proposed site has the potential to directly affect archaeological resources, the significance of which is unknown at this time. The potential direct, physical impacts of the proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project.

Construction Impacts and Mitigation

The proposed project would not impact any known prehistoric, ethnographic, and historical resources. Because the site has moderate potential to contain buried archaeological resources, staff recommends that the Energy Commission adopt Conditions of Certification **CUL-1** through **CUL-8**. These conditions of certification 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 historical resources. To accomplish this, the conditions provide for:

- The hiring of a Cultural Resources Specialist, Cultural Resources Monitors, and Cultural Resources Technical Specialists;
- The preparation of a Cultural Resources Mitigation and Monitoring Program;
- The archaeological and Native American monitoring of ground-disturbing activities in native soils;
- The recovery of significant data from discovered archaeological deposits;
- The writing of a technical archaeological report on monitoring activities and findings;
- The curation of any recovered artifacts and associated notes, records, and reports; and
- Cultural resources surveys, if the applicant chooses to use private soil borrow or disposal site rather than a commercial one.

When properly implemented, staff believes that these conditions of certification would mitigate any impacts to unknown historical archaeological resources newly discovered in the project impact areas to a less than significant level.

Assessment of Direct Impacts on Prehistoric and Historic Archaeological Resources and Proposed Mitigation

Prehistoric and Historic Archaeological Resources on the Surface of the PAA

No archaeological resources were recorded on the surface of the PAA where direct impacts could occur. Thus, there are no surficial historical resources for the purposes of CEQA and there would be no impacts to any surficial historical resources.

Buried Archaeological Resources in the PAA

No positive identification of buried prehistoric or historic archaeological resources has been made by staff or the applicant. The sediments under the proposed project site are of the appropriate age and depositional nature to have supported the formation and preservation of archaeological resources, which could also be tribal cultural resources, throughout the span of human occupation in the vicinity of the proposed project and surrounding area. If present, the proposed project could result in damage to buried archaeological resources.

Staff concludes that expectable ground-disturbance impacts on buried archaeological resources would best be minimized by implementing a comprehensive cultural resources mitigation and monitoring program for the proposed project. Implementation of a well-planned mitigation and monitoring program, including Native American monitors, would reduce the potential project impacts to a less-than-significant level.

Assessment of Direct Impacts on Ethnographic Resources

No ethnographic resources were recorded or identified in the PAA where direct impacts from the proposed project could occur. Thus, there are no ethnographic resources for the purposes of CEQA, and no impacts would occur to resources of this type.

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

Built environment technical staff has reviewed the literature search materials, other available studies as noted herein, engaged in independent research and performed on-site and off-site reconnaissance surveys. Based on the information available, staff concludes that the proposed project would have no direct impacts on known built environment historical resources. The only built environment historical resources identified within the literature search area are the Doll and Toy Museum on the Hobby City complex and the residential building at 717 S. Dale Avenue in Anaheim. Due to the Doll and Toy Museum's distance from project site (7/10 of a mile in a highly urban area), this resource would not be impacted by the project as currently proposed. While the historical resource at 717 S. Dale Avenue would be adjacent to the natural gas pipeline construction route, no impacts from construction of the pipeline are anticipated as construction activities create only a temporary change in setting and feeling and would not result in an impact to the integrity of the resource. Therefore, staff is not recommending any mitigation measures for built environment resources.

Indirect Impacts

Neither the applicant nor staff has identified any indirect impacts on any cultural resources that qualify as historical resources or unique archaeological resources under CEQA.

Staff has reviewed the literature search materials, other available studies as noted herein, and performed on-site and off-site reconnaissance surveys. Based on the information available, staff concludes that the proposed project would have no indirect impacts on known prehistoric, ethnographic, tribal cultural, or built environment historical resources. Therefore, staff does not recommend any mitigation measures for

indirect impacts to prehistoric, ethnographic, tribal cultural, or built environment historical resources.

Operation Impacts and Mitigation

The measures proposed above and below for the mitigation of impacts to previously unknown prehistoric, tribal cultural, and historic archaeological resources found during construction would mitigate impacts that may occur to any archaeological resources discovered during operation-phase repairs involving ground disturbance. Operation of the proposed project would have no impacts on ethnographic resources since none have been identified. Operation of the proposed project would have no impacts on built environment resources.

CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, § 15130). Cumulative impacts to historical resources in the project vicinity could occur if any other existing or proposed projects, in conjunction with the proposed Stanton project, had or would have impacts on historical resources that, considered together, would be significant.

For the purposes of cumulative archeological impacts analysis, for prehistoric, tribal cultural, and historic archaeological resources, staff has determined that the cumulative area of analysis for archaeological resources comprises a 6-mile-radius semicircle from the project site (**Executive Summary Figure 1**). The cumulative projects area of analysis encompasses the project site and geographic qualities that were likely of concern to the prehistoric inhabitants of the project vicinity.

Staff identified a total of 54 cumulative projects in the 6-mile buffer. All of which are projects that could contribute to a cumulative impact to archaeological resources because they involve ground disturbance (**Cultural Resources Appendix CR1, Table A3**).

The ground disturbance related to construction of the proposed project in combination with other past, present, and reasonably foreseeable projects in the vicinity could have a cumulative impact on buried, as-yet unknown archaeological deposits, either historical or unique archaeological resources (as defined under CEQA). However, staff-proposed Conditions of Certification **CUL-1** through **CUL-8** would reduce project-specific impacts to a less-than-significant level and therefore, the proposed project’s contribution to cumulative impacts on prehistoric, tribal cultural, and historic archeological resources would be less than cumulatively considerable.

The proposed project would not directly impact any known ethnographic or built environment historical resource, thus the project would not contribute to any cumulative impact to these types of historical resources.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

Staff received four comments from the applicant on the cultural resources analysis contained in the preliminary staff assessment (PSA) for the proposed Stanton project. Comments are summarized and responded to immediately below.

Applicant Comment: *Pages 4.3-33 and 34, Condition of Certification **CUL-1.** The number of the items included in the Verification is incorrect.*

Staff Response: Staff agrees with this comment and has corrected the numbering.

Applicant Comment: *Pages 4.3-39 and 40, Condition of Certification **CUL-5**, Verification. Suggests striking phrase "including Native American participation" from the Verification to conform to the language in the Condition.*

Staff Response: Staff agrees with this comment and has removed this phrase from the Verification.

Applicant Comment: *Pages 4.3-40 through 4.3-45, Condition of Certification **CUL-6**. Suggest modifying the language in the condition to take into account unique soil disposal process for this project, i.e., not requiring two monitors when soil is being dumped farther than 50 feet from the site of excavation, but still requiring two monitors where there is concurrent ground disturbance.*

Staff Response: During the PSA workshop, staff and the applicant discussed the unique soil disposal process for this project and staff agreed to the applicant's proposed changes to **CUL-6** and included those changes.

Applicant Comment: *Pages 4.3-40 through 4.3-45, Condition of Certification **CUL-6**. Suggest modifying the language in the condition to not have a full-time Native American monitor because of a lack of potential for Native American artifacts, and only requiring a Native American monitor in the event the Cultural Resources Specialist (CRS) determines that Native American artifacts have been discovered.*

Staff Response: Staff disagrees with this comment for several reasons: 1) as noted in staff's analysis above, the geology and lack of previous ground-disturbance at the site suggests a moderate potential for encountering buried cultural resources that could be important to Native Americans, and thus could be classified as tribal cultural resources, 2) Native Americans are the only individuals who can attest to the value of a cultural resource as a tribal cultural resource, 3) waiting for a Native American monitor after a resource has been discovered, wastes valuable time and money for the applicant, and 4) a CRS or Cultural Resources Monitor (CRM) cannot determine a relative value of a resource as a tribal cultural resource unless the CRS or CRM is also a Native American with ancestral ties to the project area and knowledge of potential tribal cultural resources.

COMPLIANCE WITH LORS

The applicable state laws, ordinances, regulations, and standards are listed above in **Cultural Resources Table 1**. Staff has not identified any cultural resources in the PAA that would qualify as historical or unique archaeological resources for the purposes of CEQA, and thus can definitively state that the project would comply with all identified LORS. Impacts to as-yet-unidentified prehistoric and historic archaeological resources that qualify as historical or unique under CEQA could occur during construction and operation of the proposed project; staff-proposed Conditions of Certification **CUL-1** through **CUL-8** would mitigate such impacts to less-than-significant levels. These conditions establish the necessary protocols to constructively handle the issues identified in **Cultural Resources Table 1**: the treatment of human remains discoveries during project-related ground disturbance (**CUL-1 – CUL-8**), prevention of unauthorized removal of Native American remains or artifacts from a Native American grave or cairn (**CUL-1 – CUL-8**), and non-disclosure of records pertaining to ethnographic consultants or archaeological site information (**CUL-3**).

The Orange County General Plan, the City of Anaheim Citywide Historic Preservation Plan, and City of Anaheim List of Historic Structures 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 encourage historic preservation and mitigate impacts to all historical resources in order to ensure CEQA compliance. Therefore any impacts to buried, as-yet unknown resources would be mitigated to a less than significant level through the implementation of staff-proposed Conditions of Certification **CUL-1 – CUL-8**.

CONCLUSIONS AND RECOMMENDATIONS

Based upon staff's background research and the AFC and associated documentation, staff concludes that there would be no significant impacts from the proposed project on known prehistoric, tribal cultural, and historic archaeological resources. There is moderate potential for subsurface deposits in the Project Area of Analysis (PAA), and the conditions of certification would permit the impacts to these resources to remain at a level that is less than significant.

Based upon staff's investigation of a number of built environment resources of historic age within the PAA and the results of a one-mile literature search area for the project, staff concludes that there would be no significant impacts from the project on built environment resources.

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

Staff has considered environmental justice populations in its analysis of the amended project. Staff has not identified any Native American environmental justice populations that reside within 6 miles of the project, or that rely on any subsistence resources that could be impacted by the proposed project.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 APPOINTMENT AND QUALIFICATIONS OF CULTURAL RESOURCES PERSONNEL

A. CULTURAL RESOURCE SPECIALIST

1. Appointment and Qualifications

The project owner shall assign a Cultural Resources Specialist (CRS) and at least one Alternate CRS to the project. The project owner shall submit the resumes of the proposed CRS and Alternative CRS(s), with at least three references and contact information, to the Energy Commission compliance project manager (CPM) for review and approval.

The CRS and Alternate CRS(s) shall have training and background that conform to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, Part 61. In addition, the CRS and Alternate CRS(s) shall have the following qualifications:

1. A background in anthropology, archaeology, history, architectural history, or a related field;

2. At least 10 years of archaeological or historical experience (as appropriate for the project site), with resources mitigation and fieldwork;

3. At least three years of field experience in California; and

4. At least three years of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The project owner may replace the CRS by submitting the required resume, references and contact information of the proposed replacement CRS to the CPM.

2. Duties of Cultural Resources Specialist

The CRS shall manage all cultural resource monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resource activities, unless management of these is otherwise provided for in accordance with the cultural resource conditions of certification (conditions). The CRS shall serve as the primary point of contact on all cultural resource matters for the Energy Commission. The CRS shall obtain the services of Cultural Resources Monitor(s) (CRMs), Native American Monitor(s) (NAMs), and other technical specialist(s), if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations

regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

After all ground disturbances are completed and the CRS has fulfilled all responsibilities specified in these cultural resources conditions, the project owner may discharge the CRS, after receiving approval from the CPM.

The cultural resource conditions shall continue to apply during operation of the proposed power plant, limited to those ground disturbing activities in non-fill sediments.

B. CULTURAL RESOURCES MONITORS

1. Appointment and Qualifications

The CRS may assign Cultural Resources Monitor(s) (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:

Preference in selecting NAM(s) shall be given to Native Americans with:

1. Traditional ties to the area being monitored.

2. Knowledge of local historic and prehistoric Native American village sites.

3. Knowledge and understanding of Health and Safety Code, Section 7050.5 and Public Resources Code, Section 5097.9 et seq.

4. Ability to effectively communicate the requirements of Health and Safety Code, Section 7050.5 and Public Resources Code, Section 5097.9 et seq.

5. Ability to work with law enforcement officials and the Native American Heritage Commission to ensure the return of all associated grave goods taken from a Native American grave during excavation.

6. Ability to travel to project sites within traditional tribal territory.

7. Knowledge and understanding of Title 14, California Code of Regulations, Section 15064.5.

8. Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding CEQA mitigation provisions.

9. Ability to read a topographical map and be able to locate sites and reburial locations for future inclusions in the Native American Heritage Commission's Sacred Lands Inventory

10. Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.

2. NAMs that Qualify as CRSs or CRMs

   A NAM that qualifies as either a CRS or CRM, in addition to being a NAM, may also function as one and only one of the following: CRS or CRM.

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, NAMS, 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 submit the qualifications of the proposed CRMs and NAMs to the CPM for review and approval.

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, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:24,000 and 1 inch = 200 feet, respectively) for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

Maps shall include any National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) -eligible cultural resources, including any historic built environment resources, identified in the project area of analysis.

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

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

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

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

Verification:

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, and Final Commission Decision have been provided to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

4. Weekly, during ground disturbance, a schedule of the next week's anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

5. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

6. If a new CRS is approved by the CPM, as provided for in CUL-1, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, Final Commission Decision, and maps and drawings have been provided to the new CRS within 10 days of such approval.

CUL-3 CULTURAL RESOURCES MITIGATION AND MONITORING PLAN (CRMMP)

Prior to the start of ground disturbance, the project owner shall submit the CRMMP, as prepared by, or under the direction of, the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the draft model CRMMP provided by the CPM, and the authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall identify measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM. The CRMMP shall be designated as a confidential document if the location(s) of cultural resources are described or mapped.

The CRMMP shall include the following elements and measures.

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the conditions of certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP."

2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any CRHR-eligible (as determined by the CPM) resources. A prescriptive treatment plan may be included in the CRMMP for limited data types.

3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.

6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects.

7. A statement that all encountered cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms, mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's (SHRC's) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from the SHRC), into a retrievable storage collection in a public repository or museum.

8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

9. A statement demonstrating when and how the project owner will comply with Health and Human Safety Code 7050.5(b) and Public Resources Code 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.

10. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.

11. A description of the contents, format, and review and approval process of the final Cultural Resource Report (CRR), which shall be prepared according to *Archaeological Resource Management Report (ARMR)* guidelines.

Verification:

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

2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval. If the location of cultural resources is identified in the CRMMP, the project owner shall submit the CRMMP under confidential cover and staff will redact the confidential information prior to submitting the CRMMP to the project compliance docket.

3. At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery).

4. Within 90 days after completion of ground disturbance (including landscaping), if cultural materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the State Historic Resources Commission's (SHRC) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from SHRC), to accept the cultural materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-4 FINAL CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final CRR to the CPM for approval. The final CRR shall be written by, or under the direction of, the CRS and shall be provided in the Archaeological Resource Management Report (ARMR) format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resources Information System (CHRIS) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval within 30 days of the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

3. Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons of any Native American groups requesting copies of project-related reports.

CUL-5 CULTURAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

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

The training shall include:

1. A discussion of applicable laws and penalties under law;

2. Samples or visuals of artifacts that might be found in the project vicinity;

3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;

5. Instruction that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

6. Instruction that employees, if the CRS, Alternate CRS, or CRMs are not present, are to halt work on their own in the vicinity of a potential cultural resources discovery, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

7. An informational brochure that identifies reporting procedures in the event of a discovery;

8. An acknowledgement form signed by each worker indicating that they have received the training; and

9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

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

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the cultural resources WEAP training program draft text and/or training video, graphics, and the informational brochure, to the CPM for review and approval.

2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 CULTURAL RESOURCES MONITORING

The project owner shall ensure that a CRS, alternate CRS, or CRMs shall be on site for all ground disturbance in areas slated for excavation into non-fill (native) sediments.

Prior to the start of ground disturbance, the project owner shall notify the CPM and all interested Native Americans of the date on which ground disturbance will ensue. Where excavation equipment is actively removing dirt concurrently at more than one location at a time, full-time archaeological monitoring shall require at least one monitor per excavation area. Where excavated material is stockpiled on-site, one monitor shall be present during loading activities of the stockpiles material into a truck for disposal.

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 NAM(s) to monitor construction-related ground disturbance in areas slated for excavation into non-fill (native) sediments. If qualified, a NAM can also serve as the CRM or CRS, but not both. Preference in selecting a NAM shall be given to Native Americans with traditional ties to the area that will 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 a 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., Stn-MB-123.
- Description.
- Measurements.
- Universal Transverse Mercator (UTM) 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 email 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 on the Native American Heritage Commission's contact list 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 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 email (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 email (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

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

CUL-7 POWERS OF CRS / CULTURAL RESOURCES DISCOVERY PROTOCOLS

The CRS shall have the authority to halt ground disturbance in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if, 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, and has provided a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary Record" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary Record" form shall include a recommendation on the CRHR/NRHP eligibility of the discovery. The project owner shall submit completed forms to the CPM.

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

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

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

3. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery, and the CRS must inform the CPM when the notifications are complete.

4. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

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

CUL-8 FILL SOILS

If fill soils must be acquired from a non-commercial borrow site or disposed of to a non-commercial disposal site, unless less-than-five-year-old surveys of these sites for archaeological resources are provided to, and approved by, the CPM, the CRS shall survey the borrow or disposal site(s) for cultural resources and record on DPR 523 forms any that are identified. When the survey is completed, the CRS shall convey the results and recommendations for further action to the project owner and the CPM, who will determine what, if any, further action is required. If the CPM determines that significant

archaeological resources that cannot be avoided are present at the borrow site, the project owner must either select another borrow or disposal site or implement **CUL-7** prior to any use of the site. The CRS shall report on the methods and results of these surveys in the final CRR.

Verification:

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

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

REFERENCES

The *TN# 00000* in a reference below indicates the transaction number under which the item is catalogued in the Energy Commission's Docket Unit. The transaction number allows for quicker location and retrieval of individual items docketed for a case or used for ease of reference and retrieval of exhibits cited in briefs and used at Evidentiary Hearings.

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CGS 2002 – California Geological Survey. *California Geomorphic Provinces Note 36.* California Department of Conservation, California Geological Survey. Electronic resource available at http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_36/Documents/note_36.pdf (accessed June 1, 2017).

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SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016

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CULTURAL RESOURCES ABBREVIATION AND ACRONYM GLOSSARY

AFC	Application for Certification
ARMR	Archaeological Resource Management Report
asl	above sea level
bgs	below ground surface
Cal. Code Regs.	California Code of Regulations
CCC	California Coastal Commission
CEC	California Energy Commission
CEQA	California Environmental Quality Act
C.F.R.	Code of Federal Regulations
CHRIS	California Historical Resources Information System
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)
HABS	Historic American Building Survey

LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
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
PSA	Preliminary Staff Assessment
SCCIC	South Central Coastal Information Center
SHL	State Historical Landmark
SHPO	State Historic Preservation Officer
SOI	Secretary of the Interior
SST	sea surface temperature
Staff	Energy Commission cultural resources technical staff
TCP	traditional cultural property
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

CULTURAL RESOURCES APPENDIX CR-1

BACKGROUND INFORMATION

The following information in this **Cultural Resources Appendix CR-1** is included to provide the reader more context to gain a better understanding of those relevant aspects briefly mentioned in the **Cultural Resources** section of the staff assessment.

ENVIRONMENTAL SETTING

Overview

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the proposed Stanton Electric Reliability Center (Stanton or 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 site and vicinity. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

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

Paleoclimate and Ecology

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

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

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

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

NATIVE PLANTS AND ANIMALS IN THE PROJECT VICINITY

Local Flora

The application for certification (AFC) describes the current suite of plants and animals of the project vicinity, with an emphasis on special-status species and sensitive ecological communities (SERC 2016a:5.2-2). The ecological communities most closely associated with the project area, and those that were available to prehistoric Native Americans, are coastal sage scrub and grassland. The vegetation communities that were present during prehistoric times are listed here with some native species that typically occur in these areas.

- Coastal Sage Scrub—Some of the species associated with this habitat include yarrow (*Achillea millefolium*), deerweed (*Acmispon glaber*), California sagebrush (*Artemisia californica*), San Diego sagewort (*Artemisia palmeri*), narrow leaf milkweed (*Asclepias fascicularis*), Southern California milkvetch (*Astragalus trichopodus* var. *lonchus*), big saltbush (*Atriplex lentiformis*), coyote brush (*Baccharis pilularis*), mule fat (*Baccharis salicifolia*), San Diego sunflower (*Bahiopsis laciniata*), cane bluestem (*Bothriochloa barbinodis*), San Diego sedge (*Carex spissa*), coastal

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

cholla (*Cylindropuntia prolifera*), salt grass (*Distichlis spicata*), ladies' fingers (*Dudleya edulis*), chalk lettuce (*Dudleya pulverulenta*), giant wild rye (*Elymus condensatus*), California bush sunflower (*Encelia californica*), California fuschia (*Epilobium canum*), California buckwheat (*Eriogonum fasciculatum*), alkali heliotrope (*Heliotropium curassavicum* var. *oculatum*), toyon (*Heteromeles arbutifolia*), coastal goldenbush (*Isocoma menziesii*), chaparral mallow (*Malacothamnus fasciculatus*), laurel sumac (*Malosma laurina*), island mallow (*Malva assurgentiflora*), wild cucumber (*Marah macrocarpus*), sticky monkey flower (*Mimulus aurantiacus*), coastal prickly pear (*Opuntia littoralis*), bladderpod (*Peritoma arborea* var. *arborea*), coast live oak (*Quercus agrifolia*), scrub oak (*Quercus dumosa*), spiny redberry (*Rhamnus crocea*), lemonadeberry (*Rhus integrifolia*), fuchsia flowered gooseberry (*Ribes speciosum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), blue elderberry (*Sambucus nigra caerulea*), blue-eyed grass (*Sisyrinchium bellum*), alkali sacaton (*Sporobolus airoides*), giant needlegrass (*Stipa coronata*), purple needlegrass (*Stipa pulchra*), Mojave yucca (*Yucca schidigera*).

- California grassland—Some of the species associated with this habitat include: valley oak (*Quercus lobata*), coast live oak (*Quercus integrifolia*), needle grass (*Stipa* spp.), bunchgrass (*Poa* spp.), three-awn (*Aristida* spp.), buttercup (*Ranunculus* spp.), larkspur (*Delphinum* spp.), mariposa lily (*Calochorutus* spp.), tarweed (*Hemizonia* spp.), blue-eyed grass (*Sisyrinchium* spp.), blue dicks (*Dichelostemma capitatum*), paintbrush (*Castilleja* spp.), baby blue eyes (*Nemophila* spp.), lupines (*Lupinus* spp.), sow-thistle (*Sonchus* spp.), star-thistle (*Centaurea solstitialis*), filaree (*Erodium* spp.) (Calflora 2017).

Local Fauna

The proposed project area currently does not provide much suitable habitat for animals. However, prior to extensive development in Orange County, animals would have been much more likely to inhabit the area. Some of these species include: tricolored blackbird (*Agelaius tricolor*), burrowing owl (*Athene cunicularia*), great blue heron (*Ardea herodias*), ferrunginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), western snowy plover (*Charadrius alexandrines nivosus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), American peregrine falcon (*Falco peregrinus anatum*), yellow-breasted chat (*Icteria virens*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), California brown pelican (*Pelecanus occidentalis californicus*), Coastal California gnatcatcher (*Polioptila californica californica*), light-footed clapper rail (*Rallus longirostris levipes*), bank swallow (*Riparia riparia*), black skimmer (*Rynchops niger*), yellow warbler (*Setophaga petechia*), California least tern (*Sternula antillarum browni*), Least Bell's vireo (*Vireo belli pusillus*), Mexican long-tongued bat (*Choeronycteris mexicana*), western mastiff bat (*Eumops perotis californicus*), silver-haired bat (*Lasionycteris noctivagans*), western yellow bat (*Lasiurus xanthinus*), South Coast marsh vole (*Microtus californicus stephensi*), pocket free-tailed bat (*Nyctinomops femorosaccus*), Southern California saltmarsh shrew (*Sorex ornatus salicornicus*), and American badger (*Taxidea taxus*) (SERC 2016b:5.2A).

PREHISTORIC SETTING

The regional prehistoric setting is generally divided into four time periods: ancient sites (commonly referred to in the archaeological literature as Paleoindian and Paleo-Coastal traditions), Early Holocene (11,500–7550 B.P.), Middle Holocene (7950–1450 B.P.), and Late Holocene (1450 B.P.–present) (SERC 2016a:5.3-2–5.3-4).

Archaeologists traditionally view the Terminal Pleistocene and Early Holocene archaeology of Southern California as the product of people who focused on extracting resources from the terrestrial environment. These Paleoindians were viewed as originally dwelling in the southern California deserts and using lake and lakeside resources—an economic orientation referred to as the Western Pluvial Lakes Tradition (WPLT)—until Pleistocene-age lakes in the deserts and Great Basin dried at the beginning of the Early Holocene, at which time some WPLT peoples migrated west to the coast and adjusted their food-getting strategies. (Byrd and Raab 2007:217.) The presence of archaeological sites on the Channel Islands at the beginning of the Holocene Epoch (Braje et al. 2014:122), however, suggests that the southern California coast was not simply colonized by WPLT peoples, but by one or two distinct groups of people. The Early Holocene marine economy (fish and shellfish), has long been equated with the San Dieguito Complex because of assumed links with the WPLT and similarities in flaked stone tools (Moratto 2004:Figure 4; Wallace 1955:218). The marine focus, however, clearly represents a distinct lifeway, and early coastal sites—situated on bays and estuaries—are now commonly classified as part of the Paleo-Coastal Tradition (ca. 12,000–8000 B.P.) (Byrd and Raab 2007:218).

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 1979:455). 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 notable is the Monte Verde site in Southern Chile, which has withstood significant scientific scrutiny. The archaeologists working there 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.

WPLT archaeological sites feature leaf-shaped, Lake Mojave, and Silver Lake projectile points; stone crescents; formal and expediently made flake tools; atlatl (spear-thrower) hooks; and micro-cores. Tools for plant processing are notably absent. Paleo-Coastal Tradition sites exhibit a similar flaked stone tool assemblage, but differ from the WPLT sites in that the former have yielded pitted stones, asphaltum, pointed-bone objects, and shell spoons and ornaments (Moratto 1984:104, 109). Marine shellfish, fish, and mammals also are dominant at mainland coastal sites (approximately 73 percent of animal remains) compared to pericoastal and other inland sites (25 percent) (Erlandson et al. 2007:61).

Late in the Early Holocene (about 8000 B.P.), the Los Angeles basin archaeological record presents a new culture and adaptive pattern known as the Millingstone Horizon. The Millingstone Horizon is a distinctive and widespread archaeological complex, found west of the Sierra Nevada from the Baja Peninsula north to Clear Lake (Jones 2008:Figure 1). Millingstone sites are recognizable by abundant millingstones and handstones (locally referred to as metates and manos, respectively). Most of the approximately 40 radiocarbon-dated Millingstone sites are located on or near the coast. The relative lack of interior Millingstone traces might not reflect a low inland population density. Rather, Millingstone archaeology in the interior might be buried under younger soils and sediments, or sometimes cannot be firmly dated to the Millingstone period for lack of dateable materials, such as bone and charcoal. (Glassow et al. 2007:194.)

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

The Late Holocene (ca. 1200 B.P.–Spanish contact) is the major archaeological trend of this period: abandonment of larger projectile points in favor of smaller points suited to the bow and arrow, concentration of populations into larger villages, proliferation of satellite temporary camps and single-task sites, and the development of what became the Gabrielino society known from the historic period (SERC 2016a:5.3-4).

ETHNOGRAPHIC SETTING

The Gabrielino people and representative tribes are the Native Americans most directly related to the project vicinity. Historically, anthropologists have classified the Gabrielino Tongva into four subgroups based on the dialect of the Gabrielino Tongva language spoken: those of the Los Angeles Basin/Gabrielino proper, those of the northern mountainous area including the inland San Fernando Valley/Fernandeño, those of Santa Catalina and San Clemente islands, and those of San Nicolas Island (Harrington 1962:viii). Earlier anthropological linguists asserted that the Gabrielino were a Cupan speaking group (i.e., a language of the Uto-Aztecan stock of the Takic language family)

(see Bean and Smith 1978:538), but it is now generally accepted that the Gabrielino language is a stand-alone Takic language, distinct from the Cupan sub-group (Mithun 1999:539).

The name ‘Gabrielino’ is derived from the Spanish missionaries who established Catholic missions in the Los Angeles basin in the late 1700s. Two missions were established in the soon-to-be-renamed tribe’s territory: San Gabriel Archangel (initially established near Montebello in 1771, but moved to San Gabriel in 1776) and San Fernando Rey de España (established in 1797 in what is now Mission Hills), respectively named after the biblical angel Gabriel and Saint Ferdinand, King of Spain. Those indigenous Californians closest to Mission San Gabriel became known as ‘Gabrielinos’ and those closest to San Fernando Rey de España became known as “Fernandeños”. However, today the term ‘Gabrielino’ is applied to all groups indigenous to the Los Angeles Basin.

Prior to the Spanish period it has been suggested that the Los Angeles Basin Gabrielino referred to themselves as *Kumi vit* and the San Fernando Valley indigenous as *Pasekarum* (Bean and Smith 1978:548). However, a word that is combined with the suffix ‘*vit*’ refers to a person from a specific place or village and therefore would not be suitable in reference to a group of people occupying at least 50, if not 100 villages (Johnston 1962:10).

The word ‘*Tobikhar*’ seems to have been used in self-description by those Gabrielinos in the 1800s that moved to the missions. The name translates as “settlers” and appears to reference the fact that some Gabrielino left their traditional villages, whether willfully or under duress, and settled near the missions (Hodge 1971:480). The name *Pepii’maris,* initially used to identify those from Santa Catalina Island, was also adopted by some Gabrielino during historic times to identify themselves (McCawley 1996:10). The words *Kizh* and *Kij* also appear in the literature, but likely refer to people of a specific house. However, one extant Gabrielino group today, the Gabrielino Band of Mission Indians (aka the Kizh Nation), takes the word ‘Kizh’ to mean “houses”, and referential to all people who lived in the Gabrielino-style willow constructed house. The word ‘*Tongva*’ was provided to anthropologist C. Hart Merriam in 1902 by a Gabrielino speaker (Heizer 1968:105). Loosely translated as “people of the earth”[5], ‘Tongva’ has gained popularity since the 1990s and is sometimes used in conjunction with the word ‘Gabrielino’ (McCawley 1996:10), although at least one Gabrielino group (the Gabrielino Band of Mission Indians) rejects use of the word ‘Tongva’.

In 1811 about 30 “Kodiak” Indians, equipped with fire-arms for hunting sea otters, set sail on a ship owned by Boardman & Pope from the port of Sitka (in what is currently Alaska). Captain Whiltmore dropped the Alaskan Natives off on San Nicolas, and a “dispute arose between the Kodiaks and the natives of the islands, originating in the seizure of the females by the Kodiaks” (Anonymous 1857:348). The males were slaughtered and Captain Whiltmore returned to the island at the end of the year and took the Kodiaks back to Sitka (Anonymous 1857:348). The remaining San Nicolas

[5] McCawley (1996:9–10) suggests that the world Tongva originally named either the Gabrielinos living near Tejon or a separate Gabrielino village called *Tonjwe*.

Island Gabrielinos were removed in 1835, with the exception of one woman who remained on the island to search for a lost infant. The woman did not find the baby, but continued to live on the island, in isolation. She was removed from the island and brought to the Santa Barbara Mission in 1853, where the Chumash speakers could not understand her dialect (Hardacre 1971:272–284). Additionally, Kroeber corroborates the "Lone Woman of San Nicholas" story (Kroeber 1976:633–635). Recently, archaeologists have re-discovered the cave that the lone woman occupied during her 18 years of isolation (Schwartz and Vellanoweth 2013:391).

Some earlier references to the island dwellers and their immediate mainland coastal neighbors or relatives refer to the entire maritime-adapted culture as the "Canaliño Culture" (Johnston 1962:96; Moriarty 1969:16; Romer 1959:241). However, the usage, a Spanish word attributed by the earliest Spanish maritime explorations in the region, appears to include both the cluster of southern island dwellers that are affiliated with the Gabrielino, in addition to the cluster of northern island dwellers that are affiliated with the Chumash. The Santa Catalina Island is named *Pimu* or *Pipimar*, and the Gabrielino Tongva from *Pipimar* were called *Pepimares* (translated as "people of Pipimar") (Kroeber 1976:634, McCawley 1996:10). Despite not having a common name for the dwellers of the island, some ethnographers suggest the island cultures (and particularly those from Santa Catalina Island), were the originators of the Gabrielino Tongva culture (Moriarty 1969:2). Kroeber (1976:621–622) suggests that the religious practices affiliated with *Chinigchinix* may have originated at the Islands as well, and was then propagated to the Luiseño and Diegueño groups to the south.

Today, the names Gabrielino, Tongva, or Gabrielino Tongva seem to be the preferred references of the indigenous groups from the Los Angeles Basin. The name Gabrielino Tongva will be used for the purposes of this staff assessment, except when referring to specific tribal entities that identify by other names.

Traditional Territory of the Gabrielino Tongva

The prehistoric Gabrielino Tongva are recognized as one of the groups with great wealth and population, and who controlled one of the most resource-rich territories in all of indigenous Southern California. Their territory consisted of ocean islands and waters, coast line, riverine basins, and mountains that provided a diversity of resources (Bean and Smith 1978:538).

The territorial boundaries, while imprecise, are defined here in a counterclockwise direction and starting in the southwestern area of the territory at the mouth of Aliso Creek.[6] The boundary follows the Aliso Creek northeast into the Santa Ana Mountains and crossing the mountains near Trabuco Peak. Descending the eastern slopes of the Santa Ana Mountains the boundary runs towards the Santa Ana River and follows the river course up to where the San Andreas Rift and the Santa Ana River intersect. The boundary follows the rift in a northwest direction. The territory includes the area south of the crest of the San Gabriel Mountains. The boundary curves back towards the ocean,

[6] C. Hart Merriam (1968) suggests that the boundary is to the north along the Santa Ana River. However, this would still place the proposed Stanton project within the boundaries of the Gabrielino territory.

generally following the area defined by Soledad Canyon. The territory includes all of the San Fernando Valley, the eastern slopes of the Simi Hills and crosses the Santa Monica Mountains where the boundary line comes down to the coastline at approximately where the present town of Malibu is located. The territory includes the three Channel Islands of San Nicolas, San Clemente and Santa Catalina, the ocean waters surrounding the islands, and between the islands and the mainland. (Heizer 1968:End Papers map; Hodge 1971:480 (Vol. 1); Johnston 1962:Map; Kroeber 1976:620–621, Plate 57; McCawley 1996:3, 22–25; Moriarty 1969:5.) The territory also includes the Verdugo Mountains of which the central and highest peak was named “Tongva Peak” in 2006 (Chambers 2001:1–2).

The proposed Stanton project is located in the inland portion of the Gabrielino Tongva’s mainland territory and in between the, now channelized, San Gabriel and Santa Ana Rivers. The closest recorded Gabrielino village sites to the proposed Stanton project were *Hotuukngа* and *Pasbenga*, both of which were located close to the Santa Ana River.

Sources of Ethnographic Data

The earliest ethnographic sources of information can be found in the records of the Spanish explorers and later missionary records. Of the various documents related to Spanish exploration and subsequent colonization, Father Boscana’s manuscript on the religious beliefs of the Gabrielino Tongva and neighboring tribes has provided invaluable information, especially with regard to the *Chingichngish* religion. The earliest attempt at a comprehensive Gabrielino Tongva ethnography is attributed to Hugo Reid, a Scotsman, settler, naturalized Mexican citizen, and spouse of a Gabrielino Tongva woman, Victoria Bartholomea Reid. Reid documented place names and locations of Gabrielino villages, relying, it is assumed, extensively on his wife and her relatives and contacts for his information. Reid’s notes and letters were initially published in the *Los Angeles Star* in 24 weekly installments beginning in February of 1852, and reprinted in the *Star* in 1869. These letters were since republished by Robert Heizer (1968), with extensive notes to provide clarification and context. Friar Zephyrin Englehardt, historian of the Franciscans, details some ethnographic information in his writings on the California Missions in general (Englehardt 1974) and specifically the two missions located within Gabrielino Tongva territory (Englehardt 1927a, 1927b). C. Hart Merriam conducted ethnographic research with a Gabrielino woman that produced valuable ethno-linguistic information, the notes of which are housed at the University of California, Berkeley’s Bancroft Library. Alfred Kroeber wrote the authoritative Gabrielino Tongva section included in his *Handbook of the Indians of California* (Kroeber 1976:620-635). John P. Harrington conducted ethnographic and linguistic studies that included ethnographic inquiry into the *Chingichngish* cult (Harrington 1933) and he produced a Gabrielino Tongva cultural element distribution list (Harrington 1942). Bernice Johnston wrote a summary of Gabrielino Tongva ethnohistory (Johnston 1962). Lowell Bean and Charles Smith co-wrote the Gabrielino section for the encyclopedic *Handbook of North American Indians, Volume 8: California* (Bean and Smith 1978). More recently William McCawley produced a Gabrielino ethnohistory (McCawley 1996) which was followed by a publication, co-written by Claudia Jurmain that is, in part, an ethnography of contemporary Gabrielino Tongva people (Jurmain and McCawley 2009). Additionally, ethnographies of the Gabrielino’s southern neighbors, the Luiseño, written

by Constance Dubois (1908) and Raymond White (1963) provide valuable information regarding the *Chingichngish* religion and social organization, respectively.

Gabrielino Tongva Trade Affiliations, and their Economy, Resources and Material Culture

The Gabrielino Tongva maintained solid trade relations with all groups that surrounded them, including the Chumash, Tataviam, Serrano, Cahuilla, Luiseño, and Juaneño (Bean and Smith 1978:547; Davis 1961:22). Through these intermediaries, the Gabrielino Tongva were known as far north as the San Joaquin Valley, homelands of the Yokuts, and to the east among the Yuman tribes of the Colorado River. Steatite, some of the highest quality found in all of California, was traded from a source located on Santa Catalina Island as far east as present day central Arizona. In addition, coastal shellfish provided excellent source material for shell disc money and shell. Marine mammals were abundant along the Channel Islands, mainland shores, and off-shore rookeries, providing a valuable source of edible and utilitarian resources. Through long-distance exchange, the Gabrielino Tongva received goods such as deer hides, obsidian and white clay pottery. A more localized Los Angeles Basin trading network facilitated the exchange of the resources that result from the rich, local environment that constituted Gabrielino Tongva and neighboring territories. There is some suggestion that local Gabrielino Tongva trading occurred between the Islands and the coast, as already noted, but also between the coast and inland villages. *Najquqar* (Isthmus Cove) on Santa Catalina Island appears to have been the primary steatite export location on the island, and the villages at San Pedro and Redondo were likely two of the main trading hubs for steatite on the mainland (Kroeber 1976:629).

The village site of *Puvunga*, near Long Beach, was also likely a major trading center. One of the interpretations of the name of the village is “gathering place”, and Native Americans with whom cultural resources staff has consulted for other nearby projects suggest that this means the village was a trading center. It has also been suggested the name *Puvunga* means “the place of the crowd”, corroborating the indications given to Boscana that this was an important location for large gatherings of Indians (Dixon 1973:3). Moreover, the location of *Puvunga*, adjacent to the San Gabriel River and relatively near El Camino Viejo de Los Angeles (Latta 1936,:End Map), also suggests that it was likely an important trading village.

Long-distance trade networks extended beyond interior California; *Olivella*[7] (olive snail) shell beads from southern California were identified in portions of the northern and western Great Basin (Howard and Raab 1993) and parts of the southern Great Basin, some of which were dated to as early as 10,300–10,000 B.P. (Fitzgerald et al. 2005:Table 2). Shell beads identified from the northern and western Great Basin were dated to the Middle Holocene (5460–4365 B.P.) (Vellanoweth 2001Table 1), indicating that this interaction sphere extended at least through this period. Evidence for exchange between the Pacific Coast and the Great Basin was identified in the form of stone spheres discovered in both the Great Basin and on the coast (Sutton and Koerper

[7] Biologists now classify olive snails as belonging to the genus *Callianax* (Lightfoot and Parrish 2009:234).

2005:1), as well as obsidian sourced from the northwestern Great Basin, found in Orange County (Macko et al. 2005:97–98), and additional coastal sites with obsidian sourced from points all over California (Jackson and Ericson 1994:394). The closest obsidian source to the proposed Stanton project is Obsidian Butte, near the edge of the current-day Salton Sea. When the water level was low enough to access Obsidian Butte, people obtained this obsidian and traded it, but likely to a somewhat lesser degree than other high-quality obsidian sources located farther away (Jackson and Ericson 1994:398).

Once the Spanish arrived in the area, they affected trade between indigenous groups. The Padres encouraged trading and, as they considered the Indians to be free nations, they regarded stopping the trade as a breach of international law. However, military authorities disagreed, particularly on the grounds that trade between indigenous groups was a pretense to start trouble (Farmer 1935:156–157). Thus, there was disagreement between the Padres and military regarding how to treat the indigenous trading relationships, but by 1800 most of the Gabrielino Tongva were either missionized, dead, or had fled to other areas (Bean and Smith 1978:Table 1).

Interaction spheres in Western North America were not limited to the Pacific Coast and the Great Basin, but variously included the Gulf of California, Puebloan groups in the Southwest, and the Colorado River area (Jackson and Ericson 1994:398), and even played a role in the massive trade network of which Chaco Canyon in New Mexico was a major hub ca. 1,100 years ago (Mathien 1993:36). It is important to understand that Southern California, and the Los Angeles Basin more specifically, has likely been a place of migration and movement since not long after initial settlement in the New World. Not only does archaeological evidence allow such an interpretation, but ethnographic evidence confirms this as well. Indigenous understandings of their origins are tied directly to the immediate landscape and homeland in which they live. For example, in versions of the coastal Juaneño[8] creation story, two influential deities, *Ouiot*, the monster-chief, and *Chingichngish*, the supreme-creator god, emerged, at different times, at the village of *Puvunga* (Boscana 1978:32, 33). Also, Boscana (1978:119) documented that one of the places *Chingichngish* is understood to have died was at *Puvunga*. Milliken et al. (1997:15) provide a useful summary of the roles of *Ouiot* and *Chingichngish* in the origin stories among the Juaneño and Luiseño,

> *[T]hree successive sets of power entities or beings were involved with the creation of the world and institution of religious life. The first generation, a brother/sister set of entities took the form of sky and earth. They created the second generation, the First People, entities whose essences are now found in certain animals, certain ritual objects, and certain rocks, hills, and mountains. One of those entities, Wiyut (Ouiot), became the "captain" or "father" of all the First People. Following the death of*

[8] The Gabrielino Tongva were missionized and their culture so thoroughly affected before their oral histories could be documented by Euro-Americans, that there is scant ethnography concerning their origin stories, and thus ethnographic analogy with neighboring groups, such as the Juaneño, is necessary. Moreover, it would be a mistake to assume that there is any one "correct" version of the creation story or *Chingichngish* story (Milliken et al. 1997:16).

> *Wiyut, the First People assumed their present forms and humans as we know them were created. Chingichngish, the third generation of power entities, appeared among people for a short time as a teacher. He remains active in the background of existence, as the source of both positive power and punishment for behavior.*

The village of *Puvunga* was also the location where, after *Ouiot* was killed, a very large gathering of *Ouiot's* people conferred and cremated his body. After the ceremonies, the elders consulted each other regarding the collection of food stuffs, and it was at this time that the god *Chingichngish* appeared to the people. It was at the village of *Puvunga* that *Chingichngish* first taught the people "explaining the laws and establishing the rites and ceremonies necessary to the preservation of life" (Boscana 1978:33). He also taught the people what to wear, how to heal the sick, how to build the ceremonial structure (*yovaar),* how to rear the young, and how to live according to *Chingichngish's* laws (Boscana 1978:33–34).

Moreover, several ethnographic accounts suggest that the Gabrielino Tongva were the center of the Jimson weed/datura/toloache religion (also referred to as the *Chingichngish*[9] religion) and that the neighboring Luiseño, Juaneño, and Chumash fashioned similar ceremonies following the Gabrielino Tongva lead (Bean and Smith 1978:548; Kroeber 1976:626–627; Moriarity 1969:2). The spread of this religion likely followed the same routes that goods and other cultural ideas followed within Southern California.

As stated earlier, the Gabrielino Tongva territory consists of a wide array of landforms and a related diversity of resources. The territory includes ocean islands, the ocean itself, coastline beaches, estuaries, salt marshes, rivers, riverine basins or piedmonts, foothills, and mountains. The Gabrielino Tongva were proficient at gathering acorns, sage, yucca, cacti, and a variety of other plants, animals, and birds associated with the interior mountains/adjacent foothills, prairie, exposed coast, and the sheltered coastal regions. Saltwater fish, such as tuna, and dolphins (i.e., cetacean mammals) were taken from the ocean using plank canoes and tule rafts, and deer were hunted from the piedmont to the mountains. Salt was gathered for daily consumption and for trade inland. The coastline extending between San Pedro and Newport Bay, characterized as exposed coast, was an area of secondary subsistence gathering camps adjacent to the coast, with the primary subsistence villages located farther inland (Bean and Smith 1978:539).

Steatite was traded inland, in both raw and fashioned form, and used to construct animal effigies, pipes, cooking vessels, arrow straighteners, ritual objects, plaques known as comals and palettes (a type of armor plate) (Bean and Smith 1978:542, 547). Asphaltum was used to seal water tight vessels including baskets and canoes, and was used to attach rare minerals, shells, and beads to everyday objects and ceremonial

[9] There are at least six variant spellings of the name of the religious tradition. Bean and Smith (1978:548) clarify that the linguistic source is Luiseño and there is no known Gabrielino word for the religious tradition despite being considered to have originated with the Gabrielino and diffused to neighboring tribes.

dress. Bedrock and portable mortars were the predominant food processing materials. In particular, the Gabrielino Tongva were known for the unique practice of specific ownership and transportation of personal mortars. Other items of common use were metates, pestles, mealing brushes, wooden stirrers, shell spoons, and wooden bowls. Deer scapulae were fashioned into saws. Other bones, shell, wood and chert were fashioned into needles, awls, fishhooks, scrapers, flakers, wedges, shovels, projectile points, cane knives, and drills. Salt was used as a trade item, consumed only in moderation because it was understood to have the potential to cause one's hair to go grey, used in ceremony, and figured in the creation story (Davis 1961; Heizer 1968:23; Johnston 1962:62, 64, 70, 93).

Shell disc bead money was manufactured and used as local currency, and recognized as legitimate currency as far east as the Colorado River. Business transactions, and obligations and payments on debt, were tracked by knotting cordage. Ceremonial rattles were fashioned from gourds. Pottery does not show up in the archaeological record of the area until the Late Mission Period, and was made by coiling and the paddle and anvil technique. Baskets were woven from rushes, grass, and various bushes. Basket types included mortar hoppers, flat baskets, carrying and serving baskets, storage baskets and ceremonial baskets for grave offerings. Baskets were made by women who used the stems of rushes (*Juncus* sp.), grass (*Muhlenbergia rigens*), and squawbush (*Rhus trilobata).* Weapons for war and hunting consisted of war clubs, self- and sinew-backed bows, tipped and untipped cane arrows and throwing clubs and slings.

Planked canoes, fashioned from wooden planks that were tied together with cordage and caulked with asphaltum are a technological feat shared with the Chumash to the north. The large boats were ocean-worthy vessels, capable of handling rough seas, which allowed for deep-sea fishing and travel to the Channel Islands. Marsh and estuary bodies of water were traveled by rush rafts made from tule reeds. (Bean and Smith 1978:542; Heizer 1968:43–46; Kroeber 1976:628–632; McCawley 1996:111–142.)

Men and children went without clothing in the temperate climate. Women wore aprons of deerskin or skirts made from the inner bark of willow or cottonwood trees. Capes used during cold or rainy seasons were made of deerskin, rabbit fur or bird skins woven together with milkweed or yucca fiber. Otter skins were also used, in addition to being traded inland. Ritual regalia were constructed of bird plumage, shells, and beads. Body paint was used during ceremonial events (Bean and Smith 1978:540; Heizer 1968:23–24; McCawley 1996:11–13).

Houses were domed, circular and covered with tule, fern or carrizo reed mats. A large house could hold up to three or four families (~ 50 people), and was perhaps 60 feet in diameter. Smaller homes were as little as 12 feet in diameter. Willow posts (and along the coastline and on the Islands sometimes whale rib bones) were inserted about a pace apart around the circumference of the house. A smoke hole was left at the top of the dome and was covered with a tule mat when not in use. Houses along the coastline had a door which opened towards the sea to avoid the north wind, and the entryway was also covered with mats. A trench was dug inside the door to catch any run-off that might make its way through the matted doorway. The floor was dirt, sprinkled with water and compacted. A hearth was fashioned with cobbles in the center of the house. The

interior of the house was covered with more mats and rugs fashioned out of animal skin and fur. Inland houses and those at higher elevations were semi-subterranean (~ 2 feet deep) in order to conserve heat. Adjacent to houses were wind screens fashioned from posts buried in the ground and from which matting was suspended. These wind screens served as open air kitchens that were used during fair weather; during inclement weather, cooking occurred around the indoor house hearth. Also placed adjacent to the main dwelling were large granary baskets. The granary baskets, sometimes coated with asphaltum, sat upon posted platforms and were the primary storage receptacle for acorns.

Common sweathouses were small semi-circular, semi-subterranean earth covered buildings reserved for adult male use. Sweathouses were sometimes built into banks of washes. The sweathouses were heated by direct fires placed near the door, as the sweathouse was not fashioned with a smoke hole. The sweathouse was positioned near water to provide access for bathing. A larger ceremonial sweathouse probably was also fashioned similar to the common sweathouse, but somewhat larger inside (12 feet in diameter), and featured a smoke hole at the top that also functioned as an entrance into the structure via a ladder. Menstrual huts were also constructed. It is not clear if the menstrual hut was also used for birthing (Heizer 1968:29).

Ceremonial open-aired enclosures, *yoyovars*, were located near chiefs' houses and the center of villages, and were made of willow posts and willow wicker. The interiors were decorated with feathers and painted posts. The ceremonial enclosures were used for rituals associated with the *Chingichngish* religion, and within the enclosure an effigy of the god *Chingichngish* was placed, and ceremonial sand paintings featuring depictions of the sun and moon were drawn on the ground, which were used for divination. Only the most revered of the village's male leadership, male initiates and female singers were permitted to enter. McCawley (1994:3–17) suggests that the ceremonial house was usually situated near permanent sources of water. During funeral ceremonies the grieving family members were allowed to enter the sacred enclosure. Some villages featured a second ceremonial enclosure that was not consecrated and was used for instruction and practicing upcoming rituals.

Villages also featured leveled fields surrounded by posted fences for sporting events. Larger villages were thought to have populations of as many as 1,500 people. Cemeteries were located outside of but immediately adjacent to villages. Gravesites were sometimes marked by baskets or slabs made from sandstone, or blue schist on Catalina Island, decorated with etched figures commemorating the deceased (Bean and Smith 1978:542; Kroeber 1976:628; McCawley 1996:27–30).

Gabrielino Tongva Political Organizations and Religious Practices

The missionary conversion process, coupled with a high rate of disease caused many deaths and a loss of traditional knowledge, thus leaving the Gabrielino Tongva cultural traditions incredibly fragmented by the time that anthropologists arrived to document what remained of the traditional culture. Therefore, less is known about traditional Gabrielino political organization and religious practice than some of the neighboring tribes, such as the Luiseño, Cahuilla, Serrano and Chumash. However, some analogs

between these neighboring groups and the Gabrielino Tongva can provide interesting and valuable information.

Based on the limited information available regarding Gabrielino Tongva social organization, they most likely adhered to a moiety kinship structure, somewhat mirroring the organization of their Juaneño and Luiseño neighbors. In addition, crosscutting the kinship system were three social classes. Social classes tend to appear in societies that have evolved in environments that provide an abundance and diversity of resources. Gabrielino Tongva society maintained an elite class who spoke a specialized language, and included hereditary chiefs and the very wealthy. There was a middle or commoner class who were modestly wealthy and from fairly reputable lineages. There was a lower class of everyone else: the poor, disreputable, slaves, or those of ill fate. Marriage or wealth accumulations were the prime avenues for social movement within the class system. There were also social organizations and guilds of craftsmen that cross-cut village social structure and could include members from neighboring tribes. Property ownership was practiced by some Gabrielino Tongva and these property boundaries were marked by painting a copy of the owner's personal mark on nearby trees, posts and rocks (Bean and Smith 1978:543, 545; McCawley 1996:10).

Villages comprised non-localized segmentary lineages. One or two lineages may have dominated a particular village for a period of time but dominance was not permanent or guaranteed. Regardless of moiety or class affiliation, political autonomy occurred most effectively at the village or "tribelet" level, with the dominant lineage's leader assuming the village chief position. The leadership was manifest in the possession of the village sacred bundle, an item of religious significance, and possession of a chief name. Leadership tended to be passed through male descent, unless the other village lineage leads could agree, either that there was no one in the controlling lineage that existed, or there was no one of the dominant lineage that was competent to lead. Leadership at times could be passed to daughters. Village chiefs could combine and preside over more than one village, and this could be done by alliance agreement or by having multiple wives, each in a different village. Larger villages could segment with some of the lineage forming a hamlet that still held allegiance to the parent village. A large and wealthy village could have multiple radiating hamlets or camps. Over time these smaller villages could rise to dominance and overshadow the parent village (Bean and Smith 1978:544).

A village leader's responsibility was to protect the sacred bundle, collect taxes from the village houses, settle disputes, make decisions of war, negotiate peace treaties, and to generally live an exemplary life. The village leader could be assisted by an announcer, a tax collector/treasurer, general assistants and messengers/runners. However villages also had shamans who from time to time could trump the authority base of the village leader (Bean and Smith 1978:544).

Shamans gained their power and knowledge directly from the Great Spirit when in Jimson weed-induced states. Shamans could cure or cause calamity and illness, they were known to divine, and knew, collected and dispensed various herbal and animal remedies including poisons for weapons. Shamans were responsible for conducting the yearly mourning ceremonies for grieving families of the deceased. While village leaders or chiefs protected the sacred bundle, shamans were responsible for the spiritual

protection of the sacred bundle. The shamans from the Santa Catalina Island were considered to be the most powerful and were accorded due respect. It was also understood that the *Chingichngish* religion was brought to the mainland by the religious leaders of the island (Bean and Smith 1978:544; Johnston 1962:97; Kroeber 1976:621–622; also see Hudson 1979).

Gabrielino Tongva religious beliefs and practices are not documented as well as other indigenous groups in the region, but it appears that they, and perhaps those living at Santa Catalina Island specifically, were the first to understand the toloache ceremonies which involved ritual consumption of Jimson weed (Kroeber 1976:621–622). This practice spread to distant tribal nations throughout Southern California and into the southern Central Valley. The consumption of Jimson weed was associated with the deity *Chingichnich*, a deity who emerged at the village site of *Puvunga* and taught the people how to live according to the tenets of this religion. Father Boscana (1978:33) wrote in the nineteenth century that *Chingichnich* taught the Gabrielino Tongva "the laws and establishing the rites and ceremonies necessary for the preservation of life." These laws included ideas regarding ritual observances, obedience to authority, economic reciprocity, family and social obligations, child rearing and hygiene, and provided the society with a strict moral, political, economic and legal code. Punishment for breaking these rules could include death for the most serious of offenses (McCawley 1994:2-37). Participants of this religion were inducted into the practice during adolescence, at a ceremony in which they gained insight into the nature of the world and the tribal and individual role and place in the universe. This insight provided success in hunting, warring or other activities of importance to the survival of the village over time (Kroeber 1976:626; McCawley 1996:143–169; Moriarty 1969.)

Gabrielino Tongva Burial Knowledge and Practice

Burial beliefs and practices stem from the instructions of *Chingichnich* before he departed this world. There was a concept of an afterlife, place of heaven, and something similar to the Christian concept of purgatory[10]. Upon death, characterized as the breath leaving the person, it was understood that the heart of the person did not die, but, through proper ritual, was transported to heaven or purgatory. Heaven was understood to exist to the west, beyond San Clemente Island. At this "distant mountain in the sea" a benevolent god presided and all was good. For those who had imperfectly practiced *Chingichnich's* instructions, a purgatory-type place to the east "in the hills" where one's heart would reside indefinitely until the god determined that proper penance had been performed.

After death, a wake occurred for three days and general mourning commenced. The body was wrapped in a blanket, mat, net or seaweed. After the wake, the body of the deceased was carried in procession to the village burial area where the burial commenced. Mainland Gabrielino Tongva tended to conduct cremations, while the Island Gabrielino Tongva adhered to flexed burial practice. The hands were placed

[10] Some scholars (e.g., Hudson and Blackburn 1978:247) suggest that the *Chingichnich* religion was a post-contact concept, which is why there are elements of Christianity in some of the practices. Other scholars (e.g., McCawley 1994:2-33) suggest that these Christian-like elements were present prior to the arrival of Europeans and are a result of organic anthropological religious evolution.

across the breast, and the entire body was bound. The portion of the coastal mainland, from Ballona Creek to the San Gabriel River, where Island Gabrielino Tongva had the strongest relations, tended to also practice flexed burial internment. For those villages adhering to cremation, the remains were either interred or disposed of to the east of the village. Grave offerings were buried with the deceased or, in the case of cremation, burned with the corpse. Some internments featured dog burials placed above the corpse. The Gabrielino Tongva saw the worlds of the living and the dead to be parallel places; therefore the items buried or burned with the deceased were intended to accompany that person to the afterworld where their statuses were recognized by the items that accompanied them. To loot a grave today is perceived by traditionally minded Gabrielino Tongva to be a robbery of the deceased's status in another world. After the funeral ceremony, the living mourned for a year, and women singed or cut their hair initiating the mourning period. Every fall, after the harvest ceremonies, an annual mourning ceremony was conducted for all of those who had died in the past year (Bean and Smith 1978:545–546; Heizer 1968:29–31; McCawley 1996:155–158.)

CONTEMPORARY TRIBES ENTITIES WITH ETHNOGRAPHIC AFFILIATIONS

There are various Gabrielino Tongva tribes, nations and other organizations. Names are very similar and it is difficult at first glance to differentiate between the groups. The Native American Heritage Commission list provided to staff (Totton 2016) provides additional tribal names that represent Gabrielino Tongva people and culture. Tribal entities are listed below.

Currently, none of the Gabrielino Tongva groups are federally recognized tribal entities, and thus are unable to receive federal monies for health programs and other social and economic benefits. However, in 1994 the California Legislature passed Assembly Bill No. 96 (recorded by the Secretary of State on September 13, 1994 as Resolution Chapter 146 of the Statutes of 1994), a bill which recognized the Gabrielino as the original inhabitants of the Los Angeles Basin, and encouraged the President and Congress of the United States to similarly recognize the tribe. Additionally, in 2007 the Mayor of Los Angeles signed a recognition letter congratulating the Gabrielino/Tongva Nation for ratifying their constitution[11], and the Los Angeles City Council also signed a resolution supporting the Gabrielino/Tongva Nation in their efforts for federal recognition[12]. There was a proposed Senate Bill (SB) also in 2007 (SB 1, proposed by Senators Oropeza, Scott, and Yee) which would have established a reservation for the Gabrielino Tongva in the Los Angeles area, but without gaming rights. However, the bill was dropped by its sponsors a short time after being introduced.

[11] http://gabrielino-tongva.com/documents/Recognition.pdf.

[12] http://gabrielino-tongva.com/documents/resolution.jpg.

Gabrielino Band of Mission Indians of California – Kizh (Kitz) Nation

This tribe does not affiliate with the name "Tongva", asserting that it is a twentieth century appellation, and instead prefers the name 'Kizh' (Kitz). They understand that 'Kizh' refers to houses made of willow, tule and brush, and refers to all the people that lived in such houses, ostensibly all "Gabrielinos". The Tribal Council of seven seeks federal recognition and is an advocate for the protection of cultural resources[13].

Gabrieleno/Tongva San Gabriel Band of Mission Indians

The apparent website for this tribe, http://www.tongva.com, is not current.

Gabrielino/Tongva Nation

This tribe ratified their constitution in 2007, and subsequently received a Letter of Recognition from the Mayor of Los Angeles in addition to a resolution from the Los Angeles City Council acknowledging the heritage of the Gabrielino/Tongva Nation. In addition to a nine-member Tribal Council (*Peo'tskome*), this Tribe also maintains a Citizenship Board, an Elections Board, and a Citizenship Advisory Committee[14]. They are a distinct entity from the Gabrielino-Tongva Tribe, described below.

Tongva Ancestral Territorial Tribal Nation

This tribe does not appear to have an associated website and no background information is currently available.

Gabrielino-Tongva Tribe

The Gabrielino–Tongva Tribe currently has offices in Los Angeles, but the offices were located in Santa Monica as recently as 2007. The tribe ratified their constitution in 2007, and is guided by a council of seven. The tribe has been involved in efforts to establish a casino resort in the Los Angeles area and also maintains a college scholarship program for tribal members[15].

La Posta Band of Mission Indians

This federally recognized tribe has a reservation located near Boulevard, California. Members are of Kumeyaay descent, and the tribe maintains a 5-member tribal council[16].

Manzanita Band of Kumeyaay Nation

The Kumeyaay of the Manzanita Band are a federally recognized tribe located on a 3,580 acre reservation near Boulevard, California. Their tribal council consists of 1 tribal chairman[17].

[13] www.gabrielinoindians.org.

[14] http://gabrielino-tongva.com.

[15] http://www.gabrielinotribe.org.

[16] http://www.lptribe.net/

[17] http://www.sctca.net/manzanita.html

San Pasqual Band of Mission Indians

No information could be accessed regarding this tribe.

Sycuan Band of the Kumeyaay Nation

This federally recognized Kumeyaay tribe maintains a 640 acre reservation in the Dehesa Valley, near El Cajon, California. The tribe's casino is located in El Cajon as well, and the tribe holds an annual pow-wow. The 6-member tribal council determines and administers laws, conditions, and regulations for the benefit of the Sycuan people[18].

Viejas Band of Kumeyaay Indians

The Viejas Band is a federally recognized Kumeyaay tribe with a 15,000 acre reservation near Alpine, California. The tribe maintains two councils, a general council which includes all tribal members and votes on issues relating to budget and land use, and a tribal council which serves as the legislative and executive branch, with quasi-judicial authority as well. The tribe operates a casino in Alpine, in addition to an outlet center, and campgrounds[19].

Jamul Indian Village

The Jamul Indian Village is a federally recognized Kumeyaay tribe with a reservation in Jamul, California. They have a 6-member tribal council and casino on the reservation in Jamul.

Juaneno Band of Mission Indians Acjachemen Nation

Currently, this group is not federally recognized nor do they maintain a reservation. They have a 4-member tribal council and several specialized committees.

Campo Band of Mission Indians

The Campo Band are of Kumeyaay descent, and have a federally recognized reservation in Campo, California and maintain a 7-member tribal council. They have a casino in Campo, and also a materials (ready-mix concrete, washed concrete sand, and plaster sand) distribution business, and wind farm located on tribal lands[20].

Mesa Grande Band of Mission Indians

The federally recognized Mesa Grande Band maintains a 1,820-acre reservation near Santa Ysabel, California and is governed by a general council consisting of all members over 18 years old. A 5-member, elected business committee governs the day-to-day affairs of the tribe. This is a non-gaming tribe and they are committed to sustainable business endeavors[21].

[18] http://sycuantribe.org/tribal-government/tribal-council/
[19] http://www.viejasbandofkumeyaay.org/index.html
[20] http://www.campo-nsn.gov/
[21] http://mesagrandeband-nsn.gov/

Pala Band of Mission Indians

The Pala Band are a federally recognized group of Luiseño and Cupeño members with a 12,273-acre reservation in Pala, California. They maintain a general council which includes all eligible voters over 18 years old, and a 6-member, elected Executive Committee. The tribe's casino resort and spa is located in Pala, California, and they also maintain a skatepark, fire station, preschool, and fitness center[22].

Pauma and Yuima Reservation

The Luiseño who live on the 5,777-acre reservation in Pala, California are governed by a 4-member tribal council. The tribe maintains a casino in Pauma Valley, California, in addition to business in agriculture[23].

Pechanga Band of Mission Indians

The 5,500-acre federally recognized Pechanga reservation is located near Temecula, California. The Luiseño who are eligible, voting members of this tribe consist of the general council and elect a 7-member tribal council which is in charge of setting policy and administering government programs. The income generated from the tribe's casino in Temecula has assisted in the establishment of a community park, youth center, senior center, and tribal government center[24].

Rincon Band of Mission Indians

The Rincon Band maintains an approximately 5,000-acre reservation near Valley Center, California for their Luiseño members. This federally recognized tribe has a 5-member tribal council which, in addition to its executive, legislative, and executive authority, also serves as the board of directors for tribal enterprises.

Ewiiaapaayp Tribal Office

The Ewiiaapaayp are a federally recognized group, and are also known as the Cuyapaipe. They have an approximately 500-acre reservation near Alpine, California. The tribe maintains a general council in addition to a 3-member tribal council[25].

San Luis Rey Band of Mission Indians

The San Luis Rey Band are not federally recognized and do not have a reservation in southern California. However, they do have a tribal council and work together with some of the federally recognized tribes as part of a larger Tribal Coalition to protect cultural resources. They also hold an annual pow-wow in the summer in Oceanside, California.[26]

[22] http://www.palatribe.com/
[23] http://www.paumatribe.com/index.php
[24] http://www.pechanga-nsn.gov/
[25] http://www.sctca.net/ewiiaapaayp.html
[26] http://www.slrmissionindians.org/about/

La Jolla Band of Mission Indians

The federally recognized La Jolla Band has a nearly 10,000-acre reservation near Palomar Mountain. They are Luiseño and are governed by a 5-member tribal council, and have a campground on the reservation that is open to the public.[27]

HISTORIC SETTING

Spanish Period (1769 To 1822)

The first overland expedition through Orange County was led by Don Gaspar de Portolá in 1769 (OCHS 2013). Following these expeditions, the Spanish began to establish the mission system, which marked 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 1771 Father Junipero Serra founded Mission San Gabriel Arcángel, in present-day San Gabriel (Los Angeles County) (OCHS N.D). Mission San Juan Capistrano, in present-day San Clemente (Orange County) was founded on November 1, 1776 (OCHS 2013). The modern City of Stanton is located approximately 22 miles southeast of Mission San Gabriel Arcángel Mission and 27 miles north of Mission San Juan Capistrano. Missionaries at San Gabriel Arcángel and San Juan Capistrano controlled much of what is now Orange County. In 1773, faced with political pressures at home and a growing population in Alta California, the Spanish government began permitting privately held ranchos to be established through a system of grants that rewarded well-connected Spaniards.

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

Mexican Period (1822 to 1848)

Following the dominance of the mission system in California, 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. By the 1840s, there was a steady migration of American settlers into California. Unable to stop the incursion, the Mexican government granted citizenship to all who would pledge to follow Mexican law. Many of these foreigners received land grants on which they established domestic and commercial operations.

Rancho Los Nietos was divided by Governor Jose Figueroa in 1834 among Nieto's heirs, resulting in five separate ranchos: Rancho Las Bolsas, Rancho Las Alamitos, Rancho Los Coyotes, and Rancho San Gertrudes (OCA 2013a). Figueroa granted the 48,806 acre Rancho Los Coyotes to Juan José Nieto on May 22, 1834 (OAC 2013a: 2). The modern City of Stanton is located in a portion of the former Rancho Los Coyotes.

[27] http://lajollaindians.com/lajollatribe/

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

American Period (1848 to present)

In 1848, the discovery of gold at Sutter's Mill in northern California, near Sacramento, initiated the California Gold Rush. In 1850, California was granted statehood, and the government established the state's first 27 counties. One of the first actions of the new state government was to pass the Land Act of 1851, which established a board of Land Commissioners to review the land grant records and adjudicate claims. In order to investigate and confirm titles of California, American officials acquired the provincial records of the Spanish and Mexican governments located in Monterey. Those records, most of which were transferred to the U.S. Surveyor General's office in San Francisco, included land deeds and sketch maps (SERC 2016a:5.3-9).

The process of adjudicating land claims that occurred between 1852 and 1856 resulted in the rejection of many of the original rancho claims, which then became public domain. Although the claims of some owners eventually were substantiated, many of the original owners lost their land to squatters who were able to earn title to the land through squatters' rights claims.

Orange County and the City of Stanton

In 1869 the agricultural colony of Anaheim and surrounding community began a movement to incorporate as a city, and advocate for creation of a new county in the southern portion of Los Angeles County. City incorporation passed easily through the California Legislature and was signed by the governor in 1870. However, protest from Los Angeles County led to several failed attempts at the creation of a new county. Persistent lobbying by Anaheim local businessman Max Strobel, led to the successful creation of Orange County more than a decade after the initial advocacy effort began (Brigandi 2010).

The Southern Pacific Railroad constructed a rail spur to Anaheim beginning in the winter of 1873, and by 1875 the line connected the new city with the city of Los Angeles. The railroad quickly 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 throughout the region to bring passengers and freight to Southern California, while exporting manufactured and agricultural products (Parker 1937:116).

Southern Los Angeles County was established as an agriculture region early in its history, but it was the introduction of the railroad allowed development of more intensive forms of production, including vineyards, walnuts, and citrus. The first small citrus groves were planted in the early 1870s, and by 1875 the first commercial groves of Valencia oranges were planted by R. H. Gilman on the modern campus of California State University, Fullerton (Brigandi 2011:1). In 1881 the first local packing house

opened in the City of Orange, and by 1915 over 20,000 acres of orange groves dominated the Orange County landscape.

The city of Stanton first proposed to break away from Anaheim in 1911 when the Anaheim city government proposed to build a new sewer plant. With success in the California Legislature, the city incorporated and quickly passed an ordinance prohibiting sewer plants within its boundaries. Stanton was named after Phillip Stanton, a member of the California Assembly from 1903 to 1909 (OCHS 1913:1). Stanton incorporated during a period of rapid expansion throughout Orange County of the Pacific Electric line, also known as the Red Car system. The Pacific Electric line was operating in Los Angeles as early as 1887. In 1911, the Pacific Electric line merged with Los Angeles Railway and Southern Pacific Railroad, resulting in an impressive network of urban and rural electric railway with over 1,000 miles of track. The Pacific Electric constructed a station at the intersection of the Red Car line and the Southern Pacific tracks, which became the natural townsite of Stanton. The original Stanton townsite is roughly 0.3 miles from the western border of the proposed project site.

Stanton's incorporation resulted in high costs associated with city administration and the city eventually disbanded in 1924. Rather than being annexed back to Anaheim, Stanton's leadership opted to become an unincorporated area of Orange County. World War II resulted in an influx in military spending in Southern California, including construction of the El Toro Marine Corps Air Station, Los Alamitos Naval Weapons Station, and Santa Ana Army Base in Orange County. Following the war, workers from the war industries and soldiers returning from war settled in Southern California. The population boom experienced by Orange County resulted in the transformation of the citrus region into a series of suburban communities, periodically interrupted by manufacturing centers (Olin 1991:144–145). The opening of Disneyland in 1955 made the area a tourist destination and brought an influx of service-sector jobs. As southern California urbanized in the postwar period, Stanton again incorporated in 1956 as an independent city. The previous incorporation included nearly six square miles, while the latter incorporation resulted in a city just half of the original size (STAN 2017).

BACKGROUND RESEARCH

Cultural Resource Table A1
Cultural Resource Surveys Conducted in the PAA and within 1-mile

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to Stanton PAA	Resources Identified
OR 3337	Archaeological and Paleontological Assessment of the Proposed Peaker Project Location at Barre Substation	Pollock	Southern California Edison	2006	Within	0
OR 3338	Negative Archaeological Survey Report	McKenna et al.	Caltrans	2002	Within	0
OR 3304	Historic Architectural Report for the Proposed	Taniguchi	Galvin Preservation Associates	2006	Outside	22

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to Stanton PAA	Resources Identified
	Development of Hobby City in the Cities of Anaheim and Stanton, Orange County					
OR 2822	Request for SHPO Review of FCC Undertaking: Magnolia Katella/CA-8257A, 10701 Magnolia Avenue, Stanton, Orange County, California	Thal	Earth Touch, Inc.	2002	Outside	0
OR 2745	Cultural Resources Assessment: AT&T Wireless Services Facility No. 13116A, Orange County, California	Duke	LSA Associates	2002	Outside	0
OR 3524	Cultural Resource Records Search and Site Visit Results for T-Mobile USA Candidate LA031901 (Magnolia and Ball), 1226 South Magnolia Avenue, Anaheim, Orange County, California	Bonner	Michael Brandman Associates	2009	Outside	0
OR 3901	Cultural Resource Assessment: Verizon Wireless Services Webster Facility, City of Anaheim, Orange County, California	Fulton	LSA Associates	2009	Outside	0
OR 3021	Royal Street Communications, LLC Wireless Telecommunications Site LA0676A (SCE Orangewood Avenue)	Steiner	Cellular Archaeological Resource Evaluations	2006	Outside	0
OR 2356	Cultural Resource Assessment/Evaluation for Cingular Wireless Site SM-081-01, Orange County, California	Lindquist	McKenna et al.	2001	Outside	0

SCCIC Report Number	Title	Author	Affiliation	Date	Proximity to Stanton PAA	Resources Identified
OR 3424	Cultural Resources Records Search and Site Visit Results for Royal Street Communications, LLC Candidate LA0685A (Yale-SCE M7-T4 Alamitos-Barre #1), Yale Avenue and la Reina Street, Anaheim, Orange County, California	Bonner	Michael Brandman Associates	2006	Outside	0
OR 2547	Katella Avenue between Beach Boulevard and Dale Street in Stanton, Orange County, California FAU M-6239(001) Historic Property Survey	Huey and Webb	Caltrans	1997	Outside	0
OR 1949	Cultural Resource Assessment for the city of Garden Grove	Padon et al.	LSA Associates	1995	Outside	13
OR 3491	Cultural Resource Assessment Report: The Hobby City Development Project, cities of Stanton and Anaheim	Sorrell & Carmack	LSA Associates	2007	Outside	75

Cultural Resources Table A2
Historic and Aerial Maps Consulted

Map Name	Scale	Survey Date	Reference
1896 Anaheim	1:62,500	1896	USGS topographic map, California Quadrangle
1898 Anaheim	1:62,500	1898	USGS topographic map, California Quadrangle
1901 Anaheim	1:62,500	1901	USGS topographic map, California Quadrangle
1935 Garden Grove	1:31,680	1935	USGS topographic map, California Quadrangle
1942 Anaheim	1:62,500	1942	USGS topographic map, California Quadrangle
1949 Anaheim	1:24,000	1949	USGS topographic map, California Quadrangle

Map Name	Scale	Survey Date	Reference
1950 Anaheim	1:24,000	1950	USGS topographic map, California Quadrangle
1965 Anaheim	1:24,000	1965	USGS topographic map, California Quadrangle
1974 Anaheim	1:24,000	1974	USGS topographic map, California Quadrangle

Cultural Resources Table A3
Summary of Cumulative Projects – Archaeological Resources

Project Title	Location	Project Description	Resources Affected/Level of Significance
PPD780	7952 Cerritos Ave. and 10511–10529 Beach Blvd., Stanton	Construction of a 2,418 square foot fast food restaurant with drive-through	As-yet-unidentified/LTSWM
PPD 774	7921 Second St., Stanton	Construction of a four unit condominium project	As-yet-unidentified/LTSWM
PPD 783	10441/10425 Magnolia, Stanton	Two new commercial office buildings	In entitlement process, unknown
PPD 777	11382, 11430 and 11462 Beach Blvd., Stanton	Construct commercial development including a retail pad buiding, drive-through restaurant, gas station and a drive-through car wash	As-yet-unidentified/LTSWM
Relocation and construction of school district central kitchen facility	2735 W. Ball Rd, between S. Dale Ave. and S. Magnolia Ave, Anaheim	Relocate District's central kitchen facility from the District Office, located at 501 North Crescent Way, Anaheim, to 2735 West Ball Road, Anaheim, on land currently used as a school athletic field, and construct the new central kitchen facility thereon. Existing central kitchen facility to be converted into a District conference center—only internal changes necessary. New central kitchen facility to consist of a 40,000 sq. ft., two-story facility, with parking areas and loading dock. Four primary components: (1) dry storage, (2) cold storage, (3) production kitchen, and (4) offices and support facilities (e.g., small storage areas, restrooms, and a meeting room). New facility will have capability to produce up to 50,000 meals daily without further expansion.	As-yet-unidentified/LTSWM
Ball Road Townhomes—Bonanni, DEV 2016-00100	2730 W Ball Rd., Anaheim	Subdivide and construct a 43-unit single-family attached residential project with 10% affordable units and density bonus incentives	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
DEV 2016-00048	807 S. Dale Ave., Anaheim	Land use entitlements requested: (1) to reclassify the property from the T (Transition) Zone to the RS-2 (Single-Family Residential) Zone and, (2) a tentative parcel map to subdivide property into two parcels. Existing building on new parcel 2 would be removed.	As-yet-unidentified/LTSWM
PPD 775	11382, 11430 and 11462 Beach Blvd., Stanton	Construction of 11 single-family detached units	As-yet-unidentified/LTSWM
PPD 766	12282 Beach Blvd., Stanton	Five-story mixed use development including outpatient clinic, assisted living facility and restaurant	As-yet-unidentified/LTSWM
Lincoln Townhomes DEV2013-00028A	2726 W Lincoln Ave A,B,C,D, Anaheim	Entitlements requested: (i) a Planning Commission determination of conformance with the Density Bonus Code to construct a 35-unit condominium complex with affordable units and Tier 2 incentives and, (ii) a tentative tract map to establish a 1-lot, 35 unit attached condominium subdivision.	As-yet-unidentified/LTSWM
PPD 779	12456 Beach Blvd.	Construction of a medical office building	As-yet-unidentified/LTSWM
PPD 776	8081 Lampson Ave., Stanton	Construction of a 25 unit development, including eight live-work units	As-yet-unidentified/LTSWM
Emeritus at Fairwood Manor Expansion DEV2014-00100	200 N. Dale Ave., Anaheim	Expand an existing assisted living facility.	As-yet-unidentified/LTSWM
Westgate	Commercial retail center, 250,000 sq. ft.	Northeast corner of Beach Blvd. and Lincoln Ave., Anaheim	As-yet-unidentified/LTSWM
Lincoln Cottages, DEV2016-00043	3319-3321 W Lincoln Ave., Anaheim	Entitlements requested to develop 22-unit, three story attached single-family residential project: (i) reclassify westerly property from C-G (General Commercial) Zone to RM-3 (Multiple Family Residential) Zone; (ii) conditional use permit to allow attached single-family residential development with modified development standards; and (iii) tentative tract map to establish 22-lot residential subdivision.	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
Braille Institute	527 N. Dale Ave., Anaheim	Demolish existing Braille Institute building and reconstruct new campus with less parking than required by zoning.	As-yet-unidentified/LTSWM
Parkgate Center, DEV2015-00127	2301-2331 W Lincoln Ave 114A, Anaheim	Entitlements requested to permit the development of a 48-unit, three story attached and detached single family residential project: (i) reclassify the subject properties from C-G (General Commercial) Zone to RM-3 (Multiple Family Residential) Zone; (ii) conditional use permit to allow attached single-family residential development with modified development standards; and (iii) tentative tract map to create 48-unit residential subdivision	As-yet-unidentified/LTSWM
PPD 780	12950 Beach Blvd., Stanton	Construct a 4,175 square foot multi-tenant building with drive through	As-yet-unidentified/LTSWM
CUP-092-2017	10870 Katella Ave. Suite G, Garden Grove	Conditional use permit (CUP) request to operate new 29,010-sq. ft. Smart and Final with an Original Alcoholic Beverage Control Type ”21” (Off-Sale, General) License.	As-yet-unidentified/LTSWM
CUP-085-2016	10870 Katella Ave. Suite A, Garden Grove	CUP approval to operate new, approximately 44,007-square foot gym, Gold’s Gym, located in an integrated shopping center, Gardenland Shopping Center.	As-yet-unidentified/LTSWM
18Units on Euclid, DEV2016-00027	1525 S Euclid St., Anaheim	Entitlements requested: (i) reclassification of property from Transition (T) zone to Multiple-Family Residential (RM-3) zone; (ii) conditional use permit to construct 18-unit, 3-story condominium project with deviation in development standards; and (iii) tentative tract map for one-lot subdivision for condominium purposes.	As-yet-unidentified/LTSWM
Ball and Euclid Plaza, DEV2015-00119	901–951 S Euclid St, Anaheim	Entitlements requested: (i) conditional use permit for demolition of liquor store and construction of new drive-through restaurant building within existing shopping center; and, (ii) variance to permit fewer parking spaces than required by Zoning Code.	As-yet-unidentified/LTSWM
Hotel Stanford	7860 Beach Blvd., Buena Park	Ten-story hotel with 150 guest rooms, conference and banquet space, and rooftop bar.	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
Fairmont Private School, DEV2014-00138	2200 W Sequoia Ave., Anaheim	Four-story student dormitory building on the existing Fairmont private school campus.	As-yet-unidentified/LTSWM
SP-022-2016, LLA-011-2016, DA-002-2016, CUP-065-2016	10641 Garden Grove Blvd., 10661 Garden Grove Blvd., and 10662 Pearl St., Garden Grove	Site plan and CUP approval to construct a four-story, 10-unit, work-live mixed-use development on three separate properties in conjunction with a lot line adjustment to consolidate three properties into one. A development agreement is also included.	As-yet-unidentified/LTSWM
Barton Place	Northeast corner of Katella Ave. and Enterprise Dr., Cypress	Mixed-use project with two main components: senior residential community and commercial/retail uses along Katella Ave. Senior residential community to be developed on approx. 28 acres on northern portion of the project site. Commercial/retail improvements to be developed on approx. 5-acre parcel on southern portion of project site.	As-yet-unidentified/LTSWM
SP-034-2017, TT-17928-2017, DA-005-2017, CUP-097-2017	11222 Garden Grove Blvd., Garden Grove	A request to build two (2) work-live units and fourteen (14) residential units.	As-yet-unidentified/LTSWM
Beach and Orangethorpe Mixed Use Project (The Source)	6940 Beach Blvd., Buena Park	Max. development allowed would be 500,000-sq. ft. retail, office, restaurant, hotel, and entertainment complex. Approx. 1,000 multi-family residential units, 300-room 277,000-sq. ft. hotel, 355,000-sq. ft. retail, and 4,560 parking stalls. One option would be for one residential unit in Phase 1 to be developed for office uses. Would reduce residential by 177 condominiums in Phase 1 with addition of approx. 195,000-sq. ft. office space.	As-yet-unidentified/LTSWM
CUP-095-2017	12252 West St., Garden Grove	Construct 8,308-sq. ft. fire station, replace 1,000-sq. ft. community building with 2,000-sq. ft. community building, with associated site improvements at West Haven park in O-S (Open Space) zone.	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
SP-032-2016		Site Plan approval to construct new approx. 3,000-sq. ft. one-story building, for operation of retail meat market on vacant 13,259-sq. ft. lot with associated improvements, including parking lot and landscaping.	As-yet-unidentified/LTSWM
Anaheim Plaza, DEV2015-00120	1700 S Harbor Blvd., Anaheim	580-room, 8-story hotel with 50,000-sq. ft. meeting space; 25,600-sq. ft. restaurant space; 20,188-sq. ft. concierge lounge space; fewer parking spaces than required by code; and request to adopt development agreement between the City of Anaheim and Good Hope International for proposed hotel project.	As-yet-unidentified/LTSWM
CUP-100-2017	12361 Chapman Ave., Garden Grove	CUP approval to operate new 10,807-sq. ft. restaurant, Nova restaurant, with new State Alcohol Beverage Control Type ”47“ (On-Sale, General, Bona Fide Public Eating Place) License.	As-yet-unidentified/LTSWM
La Palma Complex Reservoir Rehabilitation & Pump Station Replacement	West St and La Palma Ave, Anaheim	Replace deteriorated, metal roof of 4.0-million gallon reservoir with aluminum roof. Install structural support for reservoir, a hypalon liner, a surge tank, a 1000–1200 kilowatt semi-enclosed diesel generator for emergency backup power, piping and 6-ft- high fencing along front setback on West St. Replace pump station and its five pumps with new pump station with four pumps. Demolish existing 3.0-MG reservoir, and existing inactive water production well. Also, remove approx. 10 shrubs/trees of ornamental variety to allow space for turn-around driveway during construction and replacement with new shrubs and trees.	As-yet-unidentified/LTSWM
Harbor Substation	131 W Katella Ave, Anaheim	Construct two 45 megavolt-amp transformers and switchgear distribution system. The two new signal-story structures to be constructed; structure measuring approx. 180 ft. by 50 ft., and second structure measuring approx. 90 ft. by 50 ft. The latter structure to house two transformers. Underground 69 kilovolt-(kV) and 12-kV transmission and distribution lines to be installed	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
		in the rights-of-way at Cerritos Ave., Katella Ave., Hast St., Zeyn Street., Disney Way, Harbor Blvd., Clementine St., Anaheim Blvd., Manchester Ave., and Ninth St. subterranean vaults (approx. 8 ft. by 20 ft.) at depths of approx. 9 ft. below grade on Katella Ave., Zeyn St., Anaheim Blvd., Haster St., Disney Wy., Clementine St., and Manchester Ave.	
SP-033-2017	13200-13220 Harbor Blvd., Garden Grove	Site plan approval to construct approx. 4,954-sq. ft. commercial pad building within parking lot of existing multi-tenant shopping center, Harbor Place Center.	As-yet-unidentified/LTSWM
Cambria Hotel and Suites, DEV2016-00038	1721 S Manchester Ave., Anaheim	Final site plan to construct 12-story, 352-room hotel, three restaurant tenant spaces and one-level of subterranean parking	As-yet-unidentified/LTSWM
Hampton Inn and Suites	7307 Artesia Blvd., Buena Park	Four-story hotel with 102 rooms, pool, spa, meeting room, and fitness area.	As-yet-unidentified/LTSWM
Buena Park Nabisco Mixed Use Project	Northwest corner of Artesia Blvd. and Rostrada Ave., Buena Park	149 residential condo/townhomes, 100-room 4 -story hotel, and auto dealership.	As-yet-unidentified/LTSWM
Mixed Use Development	5742 Beach Blvd., Buena Park	Five-story mixed-use development on approximately 2.31-acre former Anaheim General Hospital site. Includes approx. 48,000-sq. ft. medical office, restaurant, and retail uses as well as 60 senior apartments.	As-yet-unidentified/LTSWM
Industrial Building, DEV2016-00056	1710-1730 S Anaheim Blvd., Anaheim	New 143,000-sq. ft. industrial building.	As-yet-unidentified/LTSWM
La Palma Village, DEV2014-00095	1110 N Anaheim Blvd., Anaheim	Entitlements requested to permit mixed use project to include 162-unit attached single-family residential units with ground floor commercial space: amend General Plan land use designation from Open Space to Mixed Use; amend General Plan Circulation Element to modify circulation maps; reclassify subject properties from General Commercial and Industrial zones to Mixed Use Overlay Zone; CUP to allow mixed-use development with modified development standards; tentative	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
		tract map to create 152-unit residential subdivision; and tentative tract map to create a 10-unit residential subdivision with ground floor commercial space.	
GPA-001-2017, PUD-006-2017, SP-028-2017, TT-17927-2017, DA-006-2017	12901 Lewis St.and 12921 Lewis St., Garden Grove	Develop gated small lot subdivision with 70 single-family detached residential units and related street and open space improvements on 9.01-acre site. Project site currently contains church, school, and parking lot. Project includes a proposed sphere of influence change and annexation of 0.901 acres from the City of Orange to the city of Garden Grove. Amend the General Plan Land Use Map and Zoning Map with proposed annexation and modify General Plan Land Use Designation of project site from Civic/Institution to Low Density Residential and adopt Residential Planned Unit Development zoning with Single-Family Residential base zoning for the entire site. A contingent approval of site plan and tentative tract map to subdivide proposed 70-unit small lot single-family residential subdivision, with recommendation for City Council approval of development agreement with applicant.	As-yet-unidentified/LTSWM
Anaheim Five Coves (Northern Extension) Park Project	Lincoln Ave and S Rio Vista St , Anaheim	Develop 9-acre linear urban nature park extending from Lincoln St. to Fontera St. Project in second phase of existing 14-acre Anaheim Coves Nature Park and is a continuation of that park's 1.5-mile multi-use trail and native-plant greening effort for the area. Urban nature park include 0.9-mile class 1 permeable asphalt bike path parallel to stabilized decomposed granite multi-use trail. Park includes demonstration garden/children's education/nature play area and native vegetation and earthen swales for stormwater capture throughout length of park.	As-yet-unidentified/LTSWM
Anaheim Station Improvements	Metrolink Anaheim Canyon Station, Anaheim	Construct a second station track and platform, Americans with Disabilities Act improvements, possible expansion of parking.	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
Anaheim Sustainability Center	1300 and 1322 N. Lakeview Ave., Anaheim	Organic waste-to-energy facility to convert organic waste to biogas. Biogas used to generate renewable electricity for onsite needs and for sale to utility companies, including Anaheim Public Utilities. At buildout, facility would include two anaerobic digester tanks; an administration building; a receiving/processing building with loading bays; an outdoor power generation apparatus; and 15 passenger vehicle parking spaces. Capacity to generate up to 4.5 megawatts (MW) of renewable energy in Phase 1 and up to a total of 9.0 MW in Phase 2.	As-yet-unidentified/LTSWM
Prestressed Concrete Cylinder Pipe Rehabilitation Program	Second Lower Feeder—Rolling Hills, Lomita, Torrance, Los Angeles, Carson, Long Beach, Los Alamitos, Cypress, Buena Park, Anaheim, Placentia, Yorba Linda.	Rehabilitate pre-stressed concrete cylinder pipe portions of five subsurface water distribution pipelines nearing end of service life. The second lower feeder is closest to the city of Stanton. Rehab methods include steel cylinder relining with collapsed pipe, steel pipe slip-lining with non-collapsed pipe, and replacement or new pipe construction. Maintenance and replacement of worn or outdated appurtenant structures (e.g. above-ground air release valves, vacuum valves, manholes, and buried vault structures) to be completed. Individual projects in Metropolitan-owned rights-of-way, public roads and open space. Possible acquisition of additional temporary right of way to facilitate construction.	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
Anaheim Resort Electric Line Extensions Project	Cerritos Ave, Walnut St, Magic Way, Ninth St, Disney Way, Disneyland Dr., Lewis St, Anaheim	Extend underground electric line to connect to existing substation circuit breakers. Approx. 8,000-linear ft. (lf) cable line pulled through existing ductbank, approx. 11,000 lf installed within new ductbank. New ductbanks require trench generally excavated to depth of 4–10 ft. at width of approx. 2 ft. Install approx. 2,500–3,000 lf ductbank on Cerritos Ave. and Anaheim Blvd. for future installation of 69 kilovolt line to be installed under future project in mid-2017. Areas of ductbank total approx. 4.25 miles. Install risers and vaults max vault depth = 10 ft. x 8 ft. x 20 ft. long.	As-yet-unidentified/LTSWM
Lincoln Avenue Widening Project	Lincoln Ave., between East St. and Evergreen St., Anaheim	Widen approx. 2,700-ft. segment of Lincoln Ave. from four to six-lane divided facility. Remove existing improvements, clearing and grubbing, excavation, place new asphalt concrete pavement, construct concrete curb and gutter, driveways, access ramps, sidewalks, bus pads, drainage system improvements, relocate existing facilities, install traffic signal at Lincoln Ave and La Plaza intersection, traffic signal modifications, signing, striping, and landscaping. Landscaped medians along Lincoln Ave. and along project roadways include drought-tolerant and low-maintenance plantings and trees.	As-yet-unidentified/LTSWM
Lincoln Avenue Widening Project from West Street to Harbor Boulevard	Lincoln Ave. between West St. and Harbor Blvd., Anaheim	Widen Lincoln Ave. with additional through lane in each direction from West St. to Harbor Blvd. Dedicated right-turn pocket added on eastbound Lincoln Ave. at intersection with Harbor Blvd., beginning approx. 230 ft. west of intersection. Raised medians added and designated left turn-pockets would be provided at Illinois St., Ohio St., Citron St., Resh St., and Harbor Blvd. intersections. Lengthen existing left-turn pocket on eastbound Lincoln Ave. at Harbor Blvd, to 250 ft to accommodate u-turns. Remove on-street parking within project limits. Bicycles continue to use existing outside lane similar to existing	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
		condition. Parkways reconstructed with 5-ft. sidewalks separated from street by a 5-ft. wide curb- adjacent planter strip. New pavement, curbs, gutters, sidewalks, and pedestrian ramps through project area. Two replacement bus pads added eastbound and westbound Lincoln Ave. between Ohio St. and Citron St. Off-site regrading and paving on adjacent private properties required to facilitate joining of new roadway to adjacent property access driveways. Areas planned for striping and marking improvements included with reconstruction of existing storm drain catch basins and connector pipes. Construct three new catch basins near Illinois St./Lincoln Ave. intersection. Also new 24-inch storm drain constructed in Lincoln Ave. from West St. to Illinois St. to alleviate existing street flooding during rain events. New landscaping in medians and parkways.	
Rehabilitation of Western Regional Sewers, Project No. 3-64	Route along Los Alamitos Blvd., Denni St., and Bloomfield St. Route along Los Alamitos Blvd., Denni St., and Moody St. Route along Orange Ave. and Western Ave. Cities of Cypress, La Palma, Los Alamitos, and Seal Beach and the community of Rossmoor.	Rehabilitate and/or replace entire lengths of Orange Western Sub-Trunk, Los Alamitos Sub-trunk, Westside Relief Interceptor, and Seal Beach Blvd interceptor. Complete replacement of the Westside Pump Station wet well and replacement or rehabilitation of existing force main and odor control facilities.	As-yet-unidentified/LTSWM
North Basin Monitoring Well Project	Various locations, Fullerton and Anaheim (north of State Route-91 and south of Commonwealth Avenue)	Construct and operate 14 monitoring wells at 8 locations within cities of Anaheim and Fullerton.	As-yet-unidentified/LTSWM
SR-241/SR-91 Tolled Express Lanes Connector Project	Junction of SR 241 and SR 91, cities of Anaheim, Yorba Linda, and Corona	Construct median-to-median connector between SR-241 and tolled lanes in median of SR-91. Length of project approx. 8.7 miles.	As-yet-unidentified/LTSWM

Project Title	Location	Project Description	Resources Affected/Level of Significance
Eastbound State Route 22 Safety Improvement Project	East of Garden Grove Ave. to Devon Rd., cities of Orange, Santa Ana, and Garden Grove	Convert collector-distributor road to freeway to freeway direct connector for Interstate 5 (I-5) southbound. Create new freeway to freeway connector from SR-22 eastbound to I-5/SR-57 northbound by re-striping and widening connector to add one additional lane. Access to SR-22 eastbound from Bristol St. on ramp eliminated to accommodate I-5/SR-57 northbound connector. Install new and upgrade existing traffic control devices. Existing high occupancy vehicle lane with continuous access maintained. New changeable message sign installed east of SR-39.	As-yet-unidentified/LTSWM
OC Streetcar	Route along Santa Ana Blvd., Fourth Street, and Pacific Electric right-of-way in the Cities of Santa Ana and Garden Grove.	Streetcar line linking Santa Ana Regional Transportation Center with multi-modal hub at Harbor Blvd./Westminster Ave. in Garden Grove. A 4.15-mile route along Santa Ana Blvd., Fourth Street, and Pacific Electric right-of-way.	As-yet-unidentified/LTSWM

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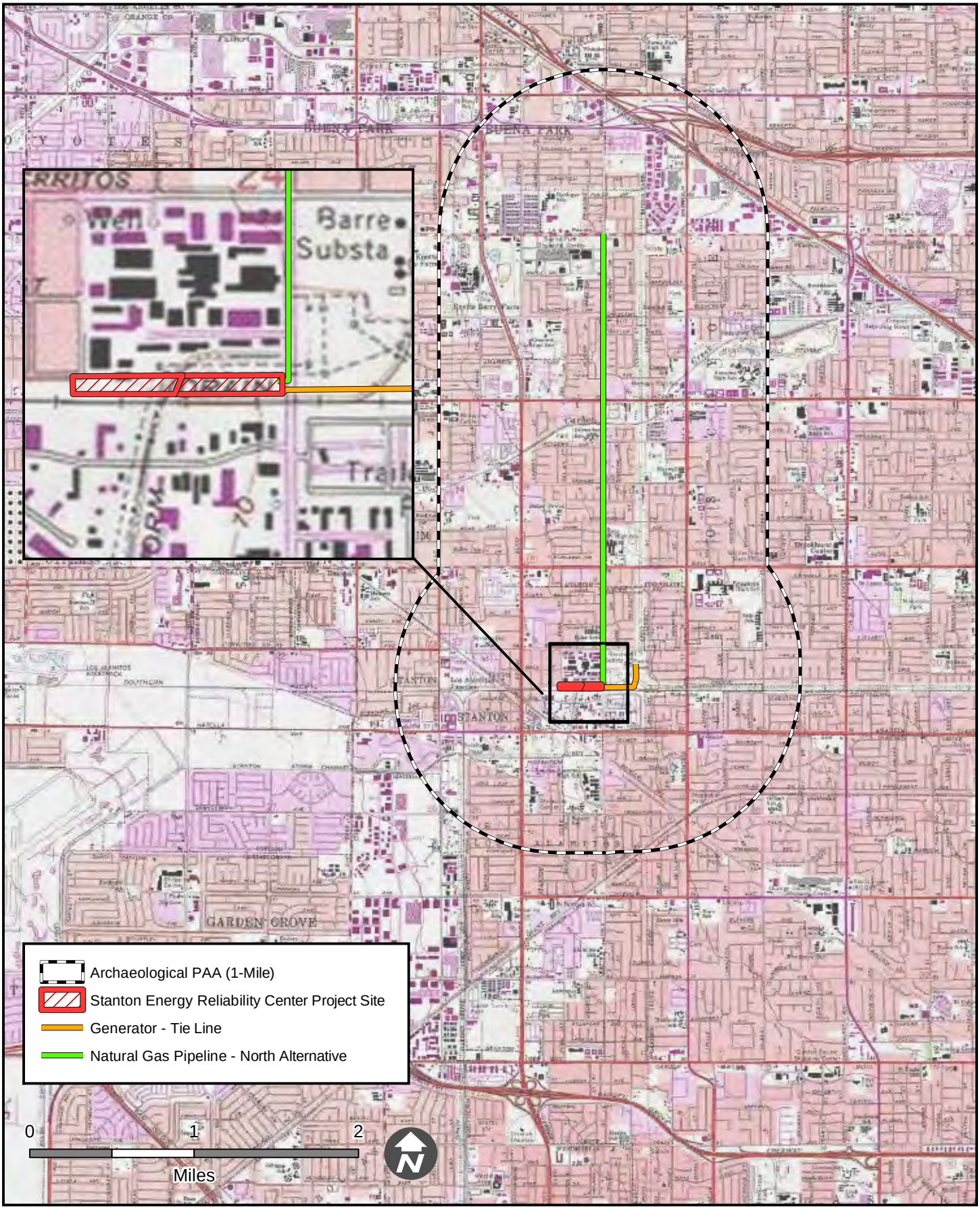
CULTURAL RESOURCES - FIGURE 1

Stanton Energy Reliability Center - Archaeological Project Area of Analysis

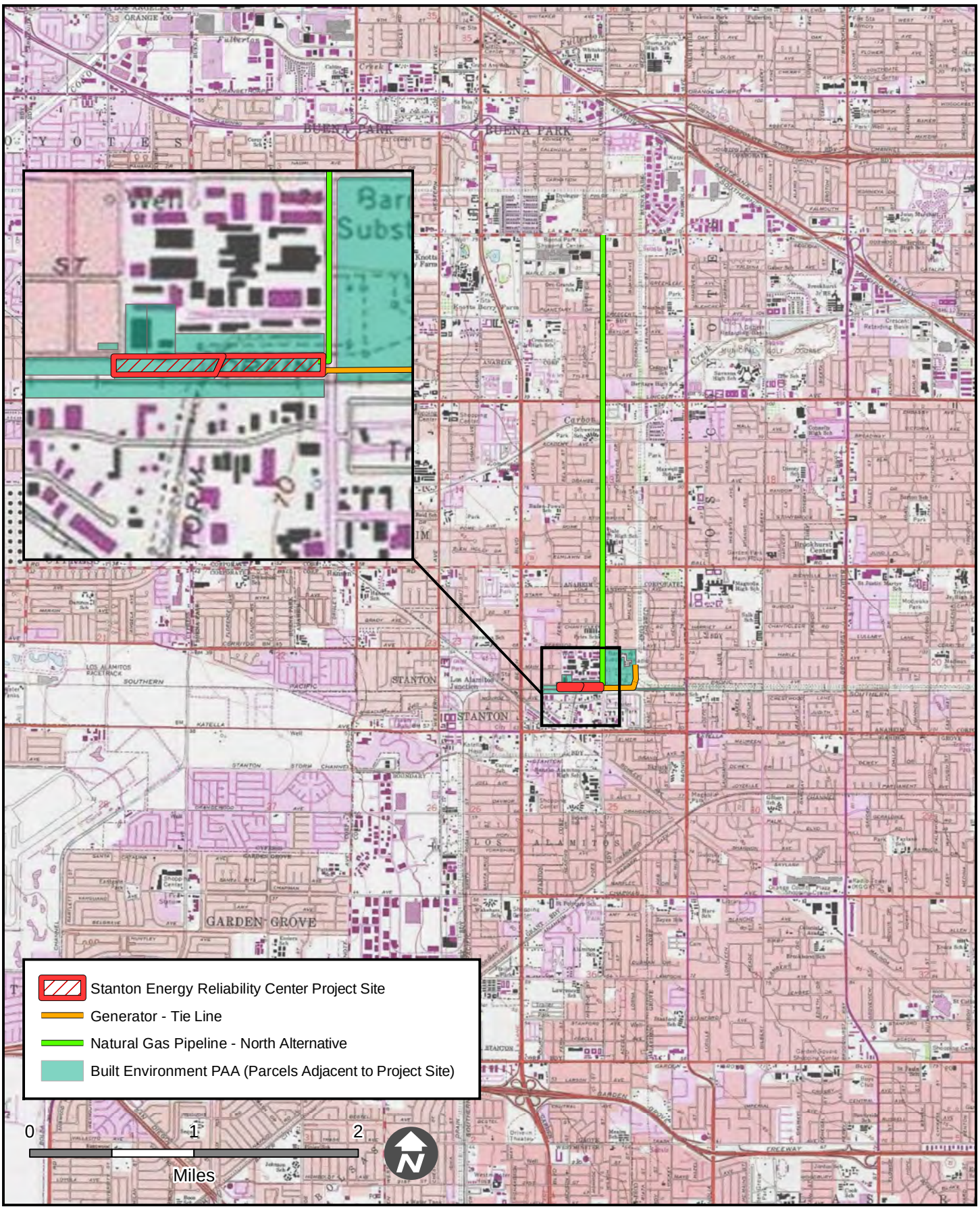


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M, California Energy Commission, USGS

CULTURAL RESOURCES - FIGURE 2

Stanton Energy Reliability Center - Built Environment Project Area of Analysis



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Orange County, CH2M, California Energy Commission, USGS

CULTURAL RESOURCES - FIGURE 3

Stanton Energy Reliability Center - Ethnographic Project Area of Analysis

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M, California Energy Commission, USGS

ENVIRONMENTAL JUSTICE

Testimony of Ellen LeFevre and John Heiser

SUMMARY OF CONCLUSIONS

Energy Commission staff concludes that construction and operation of the Stanton Reliability Energy Center (Stanton or project) would not cause significant direct, indirect, or cumulative environmental justice impacts with the inclusion of proposed conditions of certification (see technical sections). Staff also concludes that project impacts would not disproportionately affect the environmental justice population.

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 "Project 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 determination on presence or absence of an EJ population. When an EJ population is identified, staff in 12 technical disciplines [1] considers the project's impacts on this population and whether any impacts would disproportionately affect the EJ population.

[1] The 12 technical disciplines 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 Natural 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.[2, 3] Due to the change in surveys generated by the US Census Bureau, the screening process used by Energy Commission staff continues to rely on current decennial census data to determine the number of minority populations and now relies on current American Community Survey (ACS) 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 decennial data, staff continues to use the current decennial data as it allows 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 current ACS is presented for the smallest geographic 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
- Black, not of Hispanic origin

[2] 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.
[3] 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.

- 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 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 at every geography level from the largest level (nation) to the smallest level available (block group (BG)).[4] Census Bureau staff recommends the use of data no smaller than the census tract level.[5,6] 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 larger geographic area (e.g. city or community versus census tract) or combining estimates across geographic areas.

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[4] Census Block Group - A statistical subdivision of a census tract. A BG consists of all tabulation blocks whose numbers begin with the same digit in a census tract; for example, for Census 2010, 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.

[5] 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.

[6] 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.

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 identify disadvantaged communities[7] 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 (OEHHA 2017, pg. 1). CalEnviroScreen 3.0 uses the census tract scale as the unit of analysis (OEHHA 2017, pg. 8).

The CalEnviroScreen score is derived for a given place relative to other places in the state (OEHHA 2017, 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) (OEHHA 2017). 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.

Environmental Justice Table 1
Components that form the CalEnviroScreen 3.0 Score

Pollution Burden	
Exposure Indicator	Environmental Effects Indicators
Ozone concentrations	Cleanup sites
Particulate Matter (PM) 2.5 concentrations	Groundwater threats
Diesel PM emissions	Hazardous waste generators and facilities
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	Educational attainment
Low birth-weight infants	Linguistic isolation
Asthma	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:

[7] 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 or above the 75th percentile (CalEPA 2017).

- 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 four technical areas that could have project impacts that could combine with the indicators in CalEnviroScreen: Air Quality, Public Health, Soil and Water Resources, and Waste Management.

The CalEnviroScreen indicators relevant to each of the four technical areas are:

Air Quality:

- Ozone concentrations
- Particulate Matter (PM) concentrations 2.5
- Traffic density

Public Health:

- Diesel PM emissions
- Pesticide use
- Low birth-weight infants
- Toxic releases from facilities
- Cardiovascular disease
- Asthma
- Traffic density

Soil and Water:

- Drinking water contaminants
- Groundwater threats
- Impaired water bodies

Waste Management:

- Toxic releases from facilities
- Cleanup sites
- Hazardous waste generators and facilities
- Solid waste sites and facilities

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.

PROJECT 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 would be 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 Public Adviser's Office (PAO). This is an ongoing process that to date has involved the following efforts related to the project:

LIBRARIES

On November 4, 2016, Energy Commission staff sent a Notice of Receipt of the Stanton Energy Reliability Center Application for Certification (AFC) to local libraries in Stanton and Garden Grove and to the state libraries in Eureka, Sacramento, Fresno, San Francisco, Los Angeles and San Diego. On May 2, 2017, Energy Commission staff sent the Stanton AFC, after it was deemed data adequate, to local libraries close to the proposed project site, including the Buena Park Library District, Chapman Branch, Cypress, Euclid, Fullerton Public Library, Garden Grove Regional and Tibor Rubin Library, La Palma Branch, Los-Alamitos-Rossmoor Library, Stanton and Sunkist branch Library.

OUTREACH EFFORTS

Energy Commission staff and the PAO coordinated closely on public outreach early in the review process. A Notice of Receipt of the AFC was docketed on November 4, 2016 and the Stanton Public Participation Notice was docketed and mailed to the project mail list on April 5, 2017, after the AFC was deemed data adequate. The Notice of Public Site Visit, Environmental Scoping, and Informational Hearing for the project was docketed and mailed out on March 30, 2017. On April 24, 2017 this notice was published in local newspapers in English (Orange County Register), Korean (The Korea Times Orange County), and Vietnamese (Nguoi Viet Daily News) and on April 28, 2017 in the Spanish publication Excélsior.

The PAO contacted local elected officials, Native American tribal groups (which were separately contacted by the Cultural Resources staff), and community groups, including Sierra Club Angeles Chapter, California Environmental Justice Alliance, California League of Conservative Voters, California Native Plant Society, Californians Against Waste, Los Angeles Audubon, Orange County Coast Keeper, Natural Communities Coalition, California Environmental Justice Coalition, and Central California Environmental Justice Network.

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.

Energy Commission staff held a public workshop for the Preliminary Staff Assessment (PSA) in the city of Stanton on April 18, 2018, at the Stanton Community Center/City Hall. In addition to English, the workshop notice was provided in Spanish, Korean, and Vietnamese. The notice was docketed and mailed out on April 4, 2018. Spanish, Korean, and Vietnamese interpreters were also available at the PSA workshop. Additionally, the Executive Summary section of the PSA was translated into Spanish, Korean, and Vietnamese, and docketed with printed copies available at the workshop. The Executive Summary section of this Final Staff Assessment will be translated into Spanish, Korean, and Vietnamese.

PROJECT-SPECIFIC DEMOGRAPHIC SCREENING

The proposed Stanton project is located in the city of Stanton, in Orange County at 10711 Dale Avenue. There are two alternative routes for the proposed natural gas pipeline that extend into the western portion of Anaheim, southeastern Buena Park, Garden Grove, and a pocket of unincorporated Orange County.

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 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 cities of Anaheim, Buena Park, Cypress, Garden Grove, Hawaiian Gardens, La Palma, Los Alamitos, Stanton, Westminster, and the communities of Midway City and Rossmoor.

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 cities in the project area have remained consistent since 2010, with the exception of the cities of Fullerton and Los Alamitos and the unincorporated community of Rossmoor. The cities of Fullerton and Los Alamitos have a growth in minority population of approximately 4.3 and 7.3 percent, respectively. The unincorporated community of Rossmoor has a growth in minority population of approximately 5.4 percent.

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 (%)
Anaheim	April 1, 2010 Census [1]	336,265	92,362	243,903	72.53
	2012-2016 Estimate [2]	346,776 ±130	90,059 ±2,069	256,717 ±2,073	74.03 ±0.60
Buena Park	April 1, 2010 Census [1]	80,530	22,302	58,228	72.31
	2012-2016 Estimate [2]	82,771 ±97	21,271 ±1,231	61,500 ±1,235	74.30 ±1.49
Cerritos	April 1, 2010 Census [1]	49,041	8,141	40,900	83.40
	2012-2016 Estimate [2]	49,797 ±50	7,691 ±461	42,106 ±464	84.56 ±0.93
Cypress	April 1, 2010 Census [1]	47,802	20,865	26,937	56.35
	2012-2016 Estimate [2]	48,978 ±52	19,919 ±863	29,059 ±865	59.33 ±1.76
Fullerton	April 1, 2010 Census [1]	135,161	51,656	83,505	61.78
	2012-2016 Estimate [2]	139,491 ±60	47,255 ±1,595	92,236 ±1,596	66.12 ±1.14
Garden Grove	April 1, 2010 Census [1]	170,883	38,558	132,325	77.44
	2012-2016 Estimate [2]	174,676 ±97	36,340 ±1,277	138,336 ±1,281	79.20 ±0.73
Hawaiian Gardens	April 1, 2010 Census [1]	14,254	1,044	13,210	92.68
	2012-2016 Estimate [2+]	-	-	-	-
La Palma	April 1, 2010 Census [1]	15,568	4,329	11,239	72.19
	2012-2016 Estimate [2]	15,834 ±40	4,312 ±479	11,522 ±481	72.77 ±3.03
Los Alamitos	April 1, 2010 Census [1]	11,449	6,721	4,728	41.30
	2012-2016 Estimate [2]	11,661 ±43	5,998 ±422	5,663 ±424	48.56 ±3.63
Midway City	April 1, 2010 Census [1]	8,485	1,776	6,709	79.07
	2012-2016 Estimate [2+]	-	-	-	-
Rossmoor	April 1, 2010 Census [1]	10,244	7,845	2,399	23.42
	2012-2016 Estimate [2]	10,933 ±507	7,786 ±451	3,147 ±679	28.78 ±6.06
Stanton	April 1, 2010 Census [1]	38,186	8,340	29,846	78.16
	2012-2016 Estimate [2]	38,594 ±50	7,282 ±722	31,312 ±724	81.13 ±1.87
Westminster	April 1, 2010 Census [1]	89,701	22,972	66,729	74.39
	2012-2016 Estimate [2]	91,635 ±76	22,814 ±911	68,821 ±914	75.10 ±1.00

Notes: Staff's analysis of the 2012- 2016 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 2010 and [2] US Census 2017a.

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 2017b) [8]. Because of the reliability 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 poverty. **Environmental Justice Figure 2** presents the boundaries of the geographies associated with the low income data and the geographies determined to have an EJ population based on a low income population, as shown as shaded and cross-hatch areas. **Environmental Justice Table 3** shows poverty 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 geography, consistent with US EPA guidance.

[8] Staff determined that data at the place 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.

Environmental Justice Table 3
Poverty Data 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
Cerritos	49,664 ±97	2,380 ±554	4.80 ±1.1
Fullerton	136,540 ±382	20,843 ±2,025	15.30 ±1.5
REFERENCE GEOGRAPHY			
Aggregated CCD's (Total)	3,362,261 ±3,737	493,860 ±8,905	14.69 ±0.27
Downey-Norwalk CCD, LA County	415,780 ±738	58,126 ±2,739	14.00 ±0.7
Long Beach-Lakewood CCD, LA County	577,337 ±641	106,022 ±3,589	18.60 ±0.6
Whittier CCD, LA County	319,399 ±2,106	35,869 ±2,378	11.20 ±0.7
Anaheim-Santa Ana-Garden Grove CCD, Orange County	1,672,939 ±2,642	250,929 ±6,957	15.00 ±0.4
North Coast CCD, Orange County	376,806 ±1,264	42,914 ±2,203	11.40 ±0.6
ORANGE COUNTY SCHOOL DISTRICTS IN SIX-MILE RADIUS**	Enrollment Used for Meals	Free or Reduced Price Meals	
Westminster School District	9,338	6,619	**70.9%**
Centralia Elementary School District	4,417	2,681	**60.7%**
Buena Park Elementary School District	4,837	3,508	**72.5%**
Magnolia Elementary School District	6,277	5,341	**85.1%**
Savanna Elementary School District	2,331	1,523	**65.3%**
Garden Grove Unified School District	44,223	30,136	**68.1%**
Anaheim Elementary School District	18,558	15,557	**83.8%**
Cypress Elementary School District	3,969	1,280	32.2%
Los Alamitos Unified School District	9,904	1,381	13.9%
REFERENCE GEOGRAPHY			
Orange County	490,431	230,464	47%
LOS ANGELES COUNTY SCHOOL DISTRICTS IN SIX-MILE RADIUS**	Enrollment Used for Meals	Free or Reduced Price Meals	
ABC Unified School District	20,768	10,247	49.3%
REFERENCE GEOGRAPHY			
Los Angeles County	1,511,493	1,014,791	67.3%

Notes: * Population for whom poverty status is determined. Staff's analysis of the 2012 – 2016 estimates returned CV values of no more than 15, indicating the data is reliable. **Bold** text indicates geographic area or school district where the population is determined to be an EJ population based on a low income population. **Sources**: CDE 2017 and US Census 2017b.

Based on the percent of population living below the federal poverty level in the geographies in a six-mile radius of the project site, the city of Cerritos has a lower percent below-poverty-level population and the city of Fullerton has a comparable percent of below-poverty-level population when compared with the reference geography of the aggregated CCD's. With the exception of ABC Unified, Cypress Elementary and Los Alamitos Unified school districts, a comparatively larger number of students receive free or reduced price meals than those compared with their respective county.

Staff concludes that the population receiving free or reduced price meals in all of the school districts identified in **Environmental Justice Table 3**, with the exception of Los Alamitos Unified, Cypress Elementary, and ABC Unified school districts, constitute an EJ population based on a low income population as defined by *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (US EPA 2016).

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). The figure shows there are 39 disadvantaged community census tracts in a six-mile radius of the project site.

A review of **Environmental Justice Figure 1** shows that the closest residences to the project site within a disadvantaged community census tract are at the northwest and southeast corners of the project site. There is a residential community along Pacific Street and Fern Avenue, just northwest of the project site, and along the east side of Dale Avenue just south of the project site.

Environmental Justice Table 4 presents the CalEnviroScreen data for the disadvantaged community census tracts in a six-mile radius of the Stanton 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. One of the census tracts in the project's six-mile radius has a percentile above 90 percent for the total population characteristics score. Six of the census tracts in the project six-mile radius have a percentile about 90 for the total pollution burden score. The purple highlighted rows are the census tract in which the project is proposed.

Environmental Justice Table 4
CalEnviroScreen Scores for Disadvantaged Communities

Disadvantaged Communities by Census tract in the Project's Six-Mile Radius[1]			
Census Tract	**Total Population**	**CES 3.0 Percentile**	**CES 3.0 Percentile Range[2]**
6059011601	7,955	93.66	**91-95%**
6059011602	5,237	86.95	**86-90%**
6059086602	6,131	78.58	**76-80%**
6059086601	9,584	88.60	**86-90%**
6059086501	4,848	80.57	**81-85%**
6059086702	7,094	89.10	**86-90%**
6059087405	5,912	91.18	**91-95%**
6059087403	3,186	85.67	**86-90%**
6059110603	8,540	80.72	**81-85%**
6059087102	5,816	84.17	**81-85%**
6059087504	7,141	77.30	**76-80%**
6059099601	7,016	84.44	**81-85%**
6059087404	3,591	80.19	**81-85%**
6059086404	6,546	84.08	**81-85%**
6059087401	3,954	77.85	**76-80%**
6059087805	6,952	81.33	**81-85%**
6059099802	5,111	79.10	**76-80%**
6059001801	5,544	80.15	**81-85%**
6059089106	3,973	80.10	**81-85%**
6059086802	5,913	91.46	**91-95%**
6059088802	5,551	75.38	**76-80%**
6059089004	7,011	86.42	**86-90%**
6059088501	6,785	75.55	**76-80%**
6059087803	5,658	87.63	**86-90%**
6059099904	6,352	77.70	**76-80%**
6059088101	2,078	81.66	**81-85%**
6059110606	4,590	86.63	**86-90%**
6059001802	7,154	77.13	**76-80%**
6059089001	7,154	83.15	**81-85%**
6059089003	4,012	92.80	**91-95%**
6059086502	6,551	90.93	**91-95%**
6059086701	8,876	77.31	**76-80%**
6059087901	3,638	76.16	**76-80%**
6059110302	6,033	76.02	**76-80%**
6059087806	5,702	76.18	**76-80%**
6059110500	8,631	93.79	**91-95%**
6037555102	6,526	80.74	**81-85%**
6037555211	5,818	81.18	**81-85%**
6037503902	4,636	75.28	**76-80%**

Notes: [1]Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the project site. [2]Overall CalEnviroScreen Score Percentile Range. **Source:** OEHHA 2017

Environmental Justice Table 4 continued
CalEnviroScreen Scores for Disadvantaged Communities

Disadvantaged Communities by Census tract in the Project's Six-Mile Radius[1]													
Census Tract	**Ozone**	**PM 2.5**	**Diesel PM**	**Drinking Water**	**Pesticides**	**Toxic Release**	**Traffic**	**Cleanup Sites**	**Groundwater Threats**	**Hazardous Waste**	**Impaired Water Bodies**	**Solid Waste**	**Pollution Burden**
	Percentiles												
6059011601	53.02	66.23	82.15	59.30	0.00	**91.87**	**98.55**	80.32	47.17	**96.87**	0.00	70.12	**94.36**
6059011602	53.02	66.23	81.41	58.20	0.00	**96.05**	**98.31**	**99.45**	**97.48**	**99.52**	0.00	**97.36**	**98.47**
6059086602	53.02	66.23	60.16	31.42	0.00	**93.95**	79.48	62.99	13.52	**93.62**	0.00	36.52	73.65
6059086601	53.02	66.23	82.12	31.42	0.00	**93.13**	**99.29**	71.11	13.52	**96.68**	0.00	57.18	85.84
6059086501	53.02	66.23	69.61	31.42	0.00	**94.90**	**98.30**	**91.26**	32.46	**99.35**	0.00	**90.33**	**91.97**
6059086702	53.02	66.23	51.49	31.42	13.33	**92.28**	**98.96**	70.80	26.91	60.50	0.00	32.80	76.08
6059087405	53.02	66.23	58.78	31.42	0.00	**97.24**	**95.25**	74.39	61.45	73.49	0.00	88.05	88.69
6059087403	53.02	66.23	60.19	31.42	0.00	**98.24**	**97.63**	0.00	57.60	78.11	0.00	32.80	72.58
6059110603	53.02	66.23	79.42	18.51	0.00	86.07	88.41	85.37	62.86	57.13	71.61	57.18	**90.95**
6059087102	53.02	66.23	45.68	31.42	16.10	**92.40**	**97.77**	78.77	0.00	73.20	0.00	50.44	76.89
6059087504	53.02	66.23	84.82	31.42	0.00	**99.80**	**98.93**	2.01	49.69	28.04	0.00	0.00	63.31
6059099601	40.49	66.23	56.22	45.90	0.00	**96.32**	**95.38**	33.77	85.57	85.00	0.00	78.52	86.94
6059087404	53.02	66.23	59.17	31.42	0.00	**97.13**	50.37	83.02	8.85	50.68	0.00	88.05	70.91
6059086404	53.02	66.23	78.86	31.42	0.00	**96.73**	**98.57**	54.65	53.01	89.51	0.00	76.40	89.74
6059087401	53.02	66.23	59.40	31.42	0.00	**96.37**	**96.40**	**94.44**	0.00	63.00	0.00	**94.58**	83.96
6059087805	53.02	66.23	33.63	37.41	67.14	**94.15**	68.83	81.61	42.85	82.95	0.00	32.80	85.33
6059099802	40.49	66.23	55.38	46.05	40.24	**97.06**	69.52	2.72	39.42	63.69	0.00	68.45	75.30
6059001801	53.02	66.23	69.42	58.24	6.44	86.93	88.33	65.56	78.29	57.44	0.00	0.00	82.29
6059089106	53.02	66.23	48.51	40.35	0.00	**99.26**	**93.18**	30.46	50.78	10.08	0.00	9.08	58.28
6059086802	53.02	66.23	40.81	31.42	42.42	89.34	**95.96**	82.73	71.95	69.19	0.00	50.44	88.82
6059088802	53.02	66.23	54.41	46.28	27.56	**97.59**	**92.56**	0.00	44.49	43.11	0.00	0.00	65.44
6059089004	53.02	66.23	48.31	38.93	40.03	**98.12**	61.42	52.74	39.42	45.80	0.00	50.44	75.58
6059088501	53.02	66.23	44.95	40.35	0.00	**99.14**	89.21	39.89	50.78	30.58	0.00	64.87	72.13
6059087803	53.02	66.23	33.83	29.56	66.93	**93.75**	76.78	82.11	26.91	85.00	0.00	58.55	86.66
6059099904	40.49	66.23	59.70	46.05	50.73	**96.96**	83.28	45.15	55.51	31.73	0.00	9.08	76.50
6059088101	40.49	66.23	39.58	35.64	11.39	**98.70**	67.58	**91.63**	88.98	**92.86**	0.00	**92.83**	89.67
6059110606	53.02	66.23	86.97	25.48	0.00	84.97	76.15	80.32	52.38	**91.21**	71.61	12.36	88.40
6059001802	53.02	66.23	69.42	59.64	2.74	87.78	**92.88**	63.43	73.78	56.52	0.00	0.00	81.83
6059089001	53.02	66.23	48.31	38.90	39.92	**97.97**	72.87	35.08	39.42	60.50	0.00	32.80	74.79
6059089003	53.02	66.23	48.31	40.15	15.10	**98.72**	**90.61**	54.58	49.69	65.56	0.00	50.44	81.62

Disadvantaged Communities by Census tract in the Project's Six-Mile Radius[1]													
Census Tract	**Ozone**	**PM 2.5**	**Diesel PM**	**Drinking Water**	**Pesticides**	**Toxic Release**	**Traffic**	**Cleanup Sites**	**Groundwater Threats**	**Hazardous Waste**	**Impaired Water Bodies**	**Solid Waste**	**Pollution Burden**
	Percentiles												
6059086502	53.02	66.23	72.64	31.42	0.00	**95.55**	**99.01**	85.28	67.64	**99.39**	0.00	70.69	**93.14**
6059086701	53.02	66.23	73.17	63.40	2.01	**90.12**	**99.21**	70.18	69.28	50.68	0.00	9.08	85.05
6059087901	53.02	66.23	33.67	34.76	0.00	**95.14**	74.12	66.22	36.38	84.45	0.00	74.30	75.97
6059110302	53.02	66.23	80.73	18.51	49.07	85.43	**97.56**	76.12	36.38	55.09	0.00	21.13	84.53
6059087806	53.02	66.23	33.64	37.21	37.64	**94.66**	66.37	12.86	52.05	30.58	0.00	0.00	54.10
6059110500	53.02	66.23	86.36	18.51	0.00	84.86	83.42	**92.05**	86.35	83.95	76.39	78.52	**96.30**
6037555102	40.49	66.23	37.46	34.68	0.00	83.14	30.91	17.97	39.42	76.85	**94.41**	39.64	60.75
6037555211	40.49	66.23	37.45	38.14	0.00	84.07	83.92	21.31	70.19	28.04	**94.41**	0.00	65.86
6037503902	53.02	66.23	74.98	15.34	0.00	83.59	77.93	73.73	**95.40**	**96.24**	76.39	10.92	89.93

Notes: [1]Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the project site. Indicators with percentiles that are shown as **bold** text are in the 90 percentile or higher. **Source:** OEHHA 2017

Environmental Justice Table 4 continued
CalEnviroScreen Scores for Disadvantaged Communities

Census Tract	Asthma	Low Birth Weight	Cardiovascular Disease	Education	Linguistic Isolation	Poverty	Unemployment	Housing Burden	Population Characteristics
	Percentiles								
6059011601	60.25	45.23	77.53	81.93	84.60	82.70	72.98	69.29	79.46
6059011602	43.54	47.02	43.00	80.02	76.31	71.68	45.97	46.84	56.30
6059086602	55.44	49.89	62.26	76.96	70.59	75.21	65.55	82.67	72.70
6059086601	57.47	25.76	71.77	83.41	76.58	**90.47**	83.18	**98.22**	78.50
6059086501	55.21	30.26	43.47	89.98	79.94	66.96	37.67	73.17	59.45
6059086702	69.68	86.57	87.38	79.45	79.18	72.82	51.17	76.12	89.02
6059087405	61.44	41.87	50.41	**92.30**	85.43	**93.01**	**94.29**	87.19	80.93
6059087403	55.01	78.06	42.05	**92.73**	**90.04**	**94.03**	72.98	**96.60**	85.45
6059110603	66.16	32.40	54.53	70.22	**90.21**	58.48	32.87	63.20	60.59
6059087102	69.68	53.21	87.38	66.46	54.50	77.00	66.13	79.06	79.03
6059087504	43.12	87.90	46.86	**95.02**	89.01	87.78	19.25	**97.35**	77.73
6059099601	34.21	69.49	51.42	79.11	**90.80**	77.45	42.25	85.82	70.16
6059087404	61.44	44.60	50.41	**94.28**	88.67	89.96	55.30	**91.70**	77.13
6059086404	48.16	61.09	32.41	82.82	78.39	77.32	49.49	87.19	66.91
6059087401	61.44	83.72	50.41	66.72	38.39	31.77	84.10	39.87	63.03
6059087805	50.28	48.19	45.82	85.86	82.79	70.06	52.82	80.17	67.08
6059099802	39.13	60.00	59.83	81.55	**90.65**	**90.33**	28.77	89.79	72.03
6059001801	31.47	90.27	14.00	67.21	81.23	77.93	80.71	86.28	67.98
6059089106	47.48	85.38	89.12	88.72	**91.85**	83.75	25.46	89.57	86.91
6059086802	69.68	52.98	87.38	75.32	63.35	73.88	70.00	78.19	81.23
6059088802	38.36	75.65	49.35	76.51	**93.76**	71.16	47.67	**90.56**	72.95
6059089004	57.32	77.33	63.21	**91.46**	**92.03**	82.04	67.42	65.14	83.89
6059088501	51.10	37.05	86.21	74.79	74.47	70.76	56.11	56.50	68.58
6059087803	42.20	59.76	29.93	**95.18**	**96.49**	86.49	78.74	**94.97**	76.02
6059099904	39.13	47.28	59.83	75.32	**94.99**	79.57	39.54	**91.50**	68.85
6059088101	44.77	**96.32**	33.89	58.68	75.67	49.65	76.34	36.08	63.15
6059110606	63.03	72.72	50.70	75.84	**96.49**	72.68	18.33	73.17	72.28
6059001802	48.86	31.15	38.65	73.00	58.65	85.87	89.57	85.42	63.50
6059089001	56.40	58.80	61.45	82.63	**93.47**	82.58	64.04	77.86	79.22
6059089003	47.45	87.33	89.03	**90.17**	88.97	76.32	75.99	86.06	**91.83**
6059086502	53.02	35.14	40.26	**97.75**	**94.76**	**92.01**	69.48	**98.01**	75.18
6059086701	64.27	27.59	81.70	51.39	59.87	54.42	59.88	57.34	61.00
6059087901	52.45	45.23	43.19	73.86	83.39	70.94	80.71	66.21	66.69
6059110302	54.79	44.60	75.48	55.84	73.27	45.37	30.90	67.03	59.57
6059087806	68.45	35.14	76.75	83.95	**96.35**	83.38	61.35	**97.08**	83.00
6059110500	62.02	57.82	49.52	76.09	**96.85**	85.87	43.10	86.89	75.89
6037555102	77.22	78.41	76.95	71.65	88.15	75.56	58.46	60.71	86.04
6037555211	60.39	61.58	57.82	**93.52**	**95.59**	89.49	61.35	79.70	82.43
6037503902	41.47	88.62	82.25	38.88	53.27	26.45	39.54	13.59	53.65

Notes: [1]Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the project site. Indicators with percentiles that are shown as **bold** text are in the 90 percentile or higher. **Source:** OEHHA 2017

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. 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

Staff found that the project would not cause impacts to air quality and would be mitigated to less than significant. With respect to ozone (ozone precursors- NOx and VOC) and PM2.5, impacts would be less than significant. Staff also concludes that air quality impacts related to vehicle emissions would be less than significant. Likewise, the project would not cause disproportionate air quality impacts on sensitive populations, such as the EJ population.

The Air Quality section discusses impacts on the EJ population and considers the additional information that CalEnviroScreen data can provide, noting the disadvantaged community census tracts within the project area.

CalEnviroScreen 3.0 includes only two criteria pollutants: ozone and PM2.5. Air Quality impacts for all criteria pollutants including ozone and PM2.5 to the EJ population would be considered less than significant with the adopted conditions of certification. Also, air quality impacts for other pollutants emitted from the project on the EJ population would be less than significant with the adopted conditions of certification.

CalEnviroScreen 3.0 also includes a traffic parameter - traffic density. Air Quality impacts related to traffic emissions would also be considered less than significant with the adopted conditions of certification.

CULTURAL RESOURCES

Staff has not identified any Native American environmental justice populations that reside within 6 miles of the project, or that rely on any subsistence resources that could be impacted by the proposed project.

HAZARDOUS MATERIALS MANAGEMENT

The two potential incidents that could affect the EJ population would be (1) a worst case release from the aqueous ammonia storage tank and (2) a release of hazardous material during transportation by truck from SR 91 to the project site.

As for the first mentioned potential incident, the worst case release of the entire contents of the aqueous ammonia on-site storage tank, should it somehow occur even though a highly unlikely event, it would not impact any off-site receptors, including sensitive receptors, because staff's proposed Condition of Certification **HAZ-4** would mitigate the off-site impact to less than significant. **HAZ-4** would require secondary containment for the storage tank that drains to an underground vault capable of holding precipitation from a 25-year storm event plus 100 percent of the capacity of the ammonia storage tank. Thus, the worst case incident, a total loss of contents of the aqueous ammonia tank, would pose a less than significant risk to the surrounding public and would not have a disproportionate impact on the EJ population.

The second mentioned potential incident, a spill from a truck delivering hazardous materials through EJ communities along Beach Boulevard to Katella Avenue to Dale Avenue for delivery to the project, could potentially occur and involve either an aqueous ammonia or other hazardous material delivery truck. An accidental release of the hazardous materials cargo sufficient to cause a significant impact would still be very unlikely as described earlier in this technical section under the subtopic of Transportation of Hazardous Materials. Additionally, staff's proposed Conditions of Certification **HAZ-5** and **HAZ-6** would further reduce the risk of public impact resulting from transportation of hazardous materials to the Stanton site. Thus, the transportation of hazardous materials would pose a less than significant risk to the surrounding public and would not have a disproportionate impact on the EJ population.

LAND USE

A disproportionate impact to an EJ population relating to land use could occur 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 to an EJ population, or physically divide an established population of an EJ population.

The project is an infill development within an Industrial designated General Plan area zoned Industrial General (IG) by the city. The project would not physically divide an EJ community. Staff found no conflicts with applicable city of Stanton land use plans, policies, or regulations specific to an EJ population. The project's land use impacts on an EJ population would be less than significant and would not be disproportionate.

NOISE AND VIBRATION

Staff has used the benchmarks in **Noise and Vibration** subsection "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.

Restrictions on construction activities, described in Conditions of Certification **NOISE-6** and **NOISE-7,** and other noise conditions of certification, would reduce the noise impact to the minority population and ensure that impacts to the EJ population would not be disproportionate.

PUBLIC HEALTH

Staff concluded that no one (including the public, off-site nonresidential workers, recreational users, and EJ populations) would experience any acute or chronic cancer or non-cancer effects of health significance during construction and operation of the proposed project. Therefore, construction and operation of the project would not cause significant adverse direct, indirect, or cumulative public health impacts from the project's toxic air emissions. As the public health impacts are calculated for sensitive populations, such as the EJ population, and the project's toxic air emissions would not have a significant impact on the most sensitive population, the project's impact would not disproportionately impact the EJ population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3**.

Staff concluded that the project would not have a significant cumulative contribution to the indicators of diesel PM, pesticide use, toxic releases from facilities, traffic density, asthma ER visits, low birth weight infants, or cardiovascular disease in the disadvantaged community census tracts of staff's focus.

SOCIOECONOMICS

The potential for socioeconomic impacts is predominantly driven by the temporary influx of non-local construction workers seeking lodging closer to the project site. The few construction workers seeking lodging in the project area during construction would have a negligible reduction of the housing supply. As Stanton would be remotely monitored and operated on a daily basis, no hiring of operations staff is expected. The applicant would contract technicians to provide onsite routine maintenance as needed. There would be no reduction to the housing supply during operations.

A disproportionate socioeconomic impact that a project could have on minority and low income populations 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 Stanton would not displace any residents or remove any housing, there would be no disproportionate socioeconomic 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 evaluation concludes that both present-day and future flood risks are low. 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.

Staff evaluated potential water quality impacts of the project's wastewater discharges on EJ communities, provided it complies 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).

The Stanton project would mitigate potential impacts to water quality to less than significant by implementing conditions of certification, which would ensure that Santa Ana RWQCB's minimum water quality standards are met.

Water Quality

Staff reviewed the information contained within **Environmental Justice Table 4** to get information about the background surface water and groundwater quality at the site and vicinity. The CalEnviroScreen provides a useful scoring system for screening cumulative and EJ impacts based on water quality. Staff acknowledges the limitations on the applicability of this data collection to site-specific analysis, however, finds it useful for putting project impacts into regional context. The categories of the data collection pertinent to this section are titled Drinking Water, Groundwater Threats, and Impaired Water Bodies.

Drinking Water

Because the facility's wastewater discharges would not affect potable water supplies or surface water bodies in the area, the project's mitigated water quality impacts would not disproportionately affect EJ populations.

Groundwater Threats

Because the wastewater discharges from facility operations or during construction activities would not affect groundwater or soil resources in the area, the project's mitigated impacts would not cumulatively or disproportionately affect EJ populations.

Impaired Water Bodies

Because Stanton's facility wastewater discharges would not affect already impaired water bodies in the area, the project's mitigated impacts would not cumulatively or disproportionately affect EJ populations.

Flooding Risks

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

An impact to bus transit, pedestrian facilities, or bicycle facilities could cause disproportionate impacts to EJ communities, as low-income residents more often use these modes of transportation. Staff concludes that with mitigation, construction and operation of Stanton would not cause significant adverse direct, indirect, or cumulative traffic and transportation impacts on the general population including the EJ population. Stanton would have a less than significant impact on bus transit, pedestrian accessibility, and bicycle facilities. Thus, the project would not disproportionately affect the EJ population.

TRANSMISSION LINE SAFETY AND NUISANCE

The presence of an EJ population creates concern for potential disproportionate impacts from a project's transmission line operations. However, as the transmission line would be underground, long-term exposure to magnetic fields would be minimal for the general public as well as the EJ population. Thus, any related field exposure would not occur disproportionately within the 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. KOPs 1-4 reasonably represent the views residents and motorists may experience in daily life. The overall visual change was determined to be low despite the high potential for exposure from a very limited number of residents. Staff's proposed mitigation would reduce visual resource impacts to less than significant for the population in general, including the EJ population. The changes to the visual resource environment would not disproportionally affect individuals in EJ populations because of the low degree of visual change.

WASTE MANAGEMENT

The presence of an EJ population creates the concern for potential disproportionate waste management impacts from Stanton's construction and operation. Staff's assessment focused on past or existing contamination, status as a waste generating facility, and the proposed handling of nonhazardous solid waste.

Staff concludes that management of the waste generated during demolition, site clearance, construction and operation of the Stanton 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 onsite waste would be subject to LORS and proposed conditions of certification.

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. Staff's disadvantaged community census tract of focus is the one in which the project is located (census tract 6059087803) as the waste management-related indicators are correlated to the proposed facility and the site is where the project impacts would occur.

Staff concluded that the waste management impacts from the proposed project facility would occur below levels of health significance and these effects would not have a significant cumulative contribution to the indicators of toxic releases from facilities, cleanup sites, hazardous waste generators and facilities, and solid waste sites and facilities in the disadvantaged community census tract of staff's focus.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

Staff received no comments from the public, interveners, agencies, applicant, or the Committee in the area of Environmental Justice.

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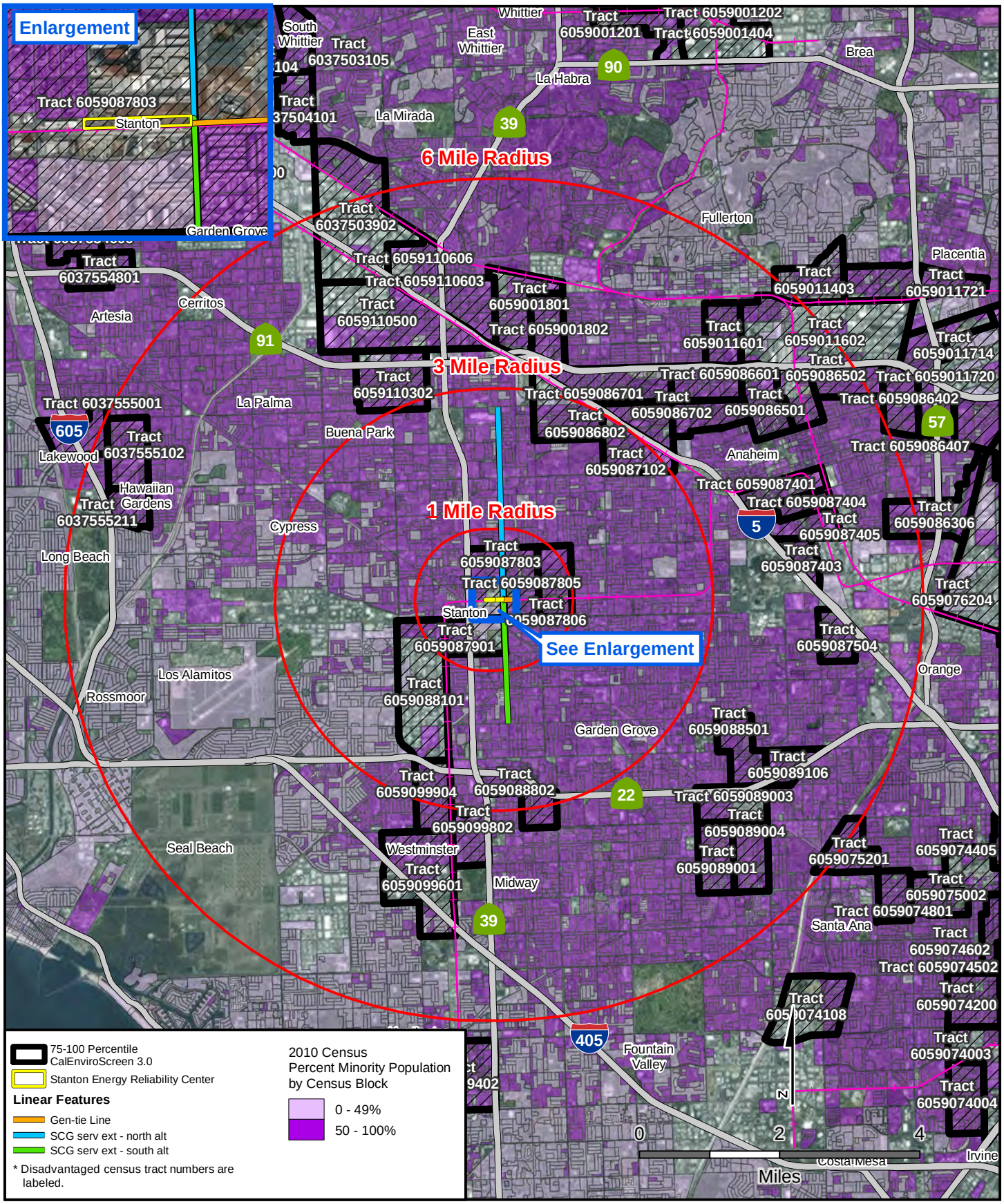
ENVIRONMENTAL JUSTICE - FIGURE 1

Stanton Energy Reliability Center - Census 2010 Minority Population by Census Block
with CalEnviroScreen Disadvantaged Communities by Census Tracts



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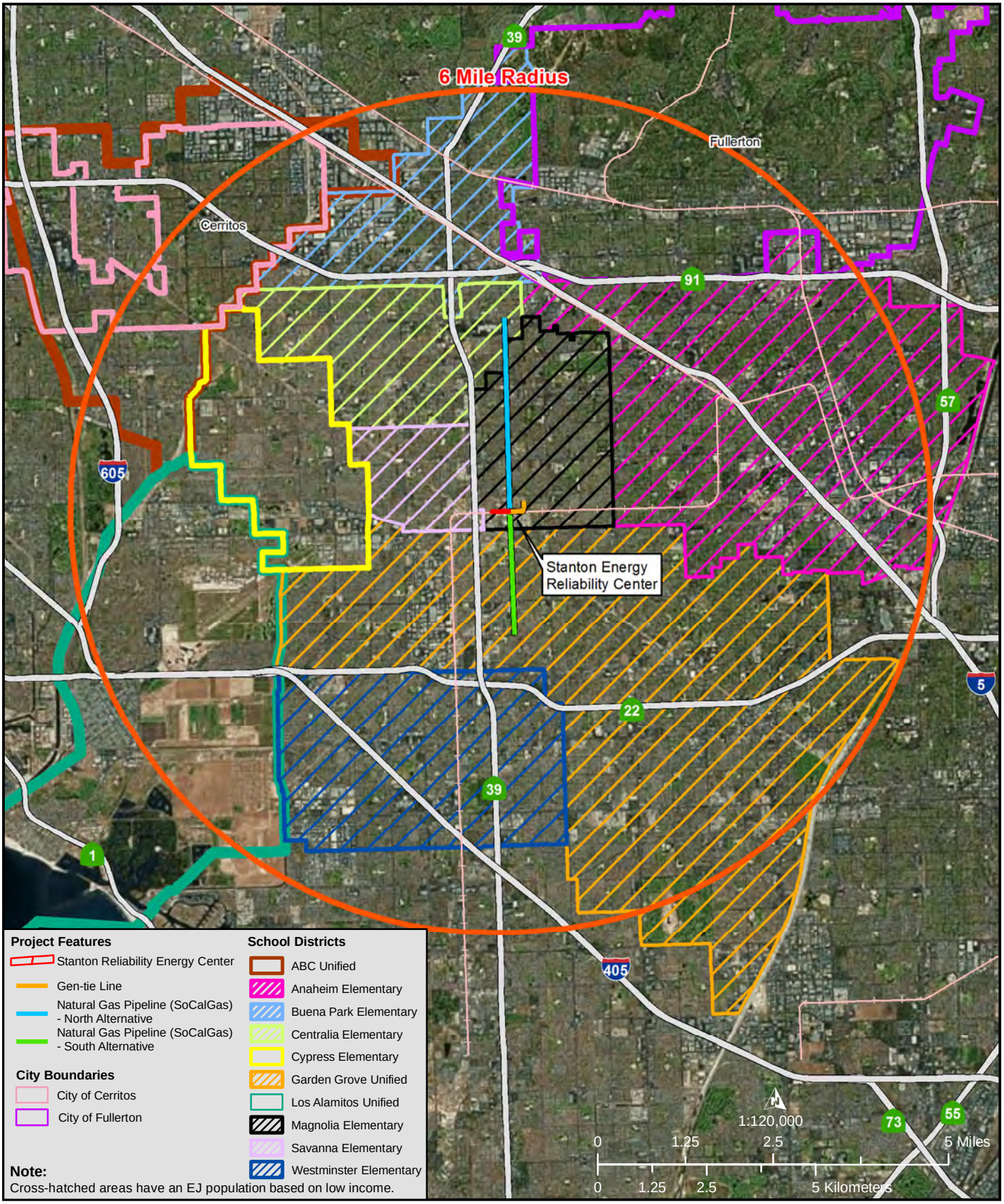
SOURCES: Census 2010 PL 94-171 Data and CalEnviroScreen 3.0 CalEPA 2017

ENVIRONMENTAL JUSTICE

ENVIRONMENTAL JUSTICE - FIGURE 2

Stanton Energy Reliability Center - Boundaries Used to Identify Environmental Justice Population Based on Low Income



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: US Census Bureau 2016, S1701 ACS 5-Year Estimates, ESRI, OpenStreetMap, Bing Aerial

ENVIRONMENTAL JUSTICE

HAZARDOUS MATERIALS MANAGEMENT

Testimony of Brett Fooks, PE and Geoff Lesh, PE

SUMMARY OF CONCLUSIONS

Staff concludes, based on its evaluation of the proposed Stanton Energy Reliability Center (Stanton or project), along with staff's proposed mitigation measures, that hazardous materials use at the site would not present a significant risk of impact to the public or the environment. 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., Stanton Energy Reliability Center, LLC (Stanton or applicant), would be required to develop a risk management plan. To ensure the adequacy of this plan, staff's proposed conditions of certification require that the risk management plan be submitted for concurrent review by the Orange County Fire Authority (OCFA) and Energy Commission staff. In addition, staff's proposed conditions of certification require compliance project manager (CPM) review and approval of the risk management plan prior to delivery of any bulk hazardous materials to the Stanton project site. Other proposed conditions of certification address the issue of the transportation, storage, and use of aqueous ammonia and site security.

INTRODUCTION

The purpose of this hazardous materials management analysis is to determine if the proposed Stanton project would pose a significant risk of 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 that risk to the extent feasible.

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide them with special personal protective equipment (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.

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

associated with anhydrous ammonia, and the slow mass transfer from the surface of the spilled material limits emissions from such spills.

Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses would be present at the proposed Stanton 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 (SERC 2016a, Section 5.5.4.1).

Although no natural gas would be stored, the project would involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The proposed project would install a new gas pipeline serving a new on-site metering station from an existing Southern California Gas Company (SoCalGas) gas pipeline. The proposed gas pipeline would originate at SoCalGas' gas pipeline network 2.75 miles north along Dale Avenue. The new gas pipeline would end at a new SoCalGas gas metering station on the site. An on-site compressor would boost the natural gas pressure for the combustion turbines (SERC 2016a, Section 2.1.7). Stanton would also require the transportation of aqueous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of hazardous materials.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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

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

Applicable LORS	Description	Stanton 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 Hazardous Materials Business Plan (HMBP) which is required by section 112r of the Clean Air Act.

Applicable LORS	Description	Stanton Consistency
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).
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.	**Consistent. HAZ-10** and the natural gas assessment in the FSA below.
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 the natural gas pipeline safety in the FSA below.
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 the natural gas pipeline safety in the FSA 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, 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, and **HAZ-6** requires only one transportation route.

Applicable LORS	Description	Stanton Consistency
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 RMP to be submitted to the CUPA and 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 outlined in the AFC, this FSA, and all HAZ conditions of certification.
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 and secondary containment.
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 outlined in the AFC, this FSA, 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 the natural gas pipeline safety in the FSA below.
Local (or locally enforced)		
City of Stanton Municipal Code, Title 16 Buildings and Construction, Division 1, Chapter 16.04.010	The city has adopted the 2016 California Building Code.	**Consistent.** See discussion in the FSA below.
City of Stanton Municipal Code, Title 17 Fire, Chapter 17.08.010	The city has adopted the 2016 California Fire Code.	**Consistent.** See discussion in the FSA below.

The Certified Unified Program Authority (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 the city is the Orange County Environmental Health Division – Hazardous Materials Management Section (OCEHD). The OCEHD is also responsible for all other CUPA programs including underground storage compliance. Construction and design of the buildings and vessels storing hazardous materials would meet the appropriate seismic requirements of the latest adopted (2016 or later) California Building Code and the latest adopted (2016 or later) California Fire Code.

SETTING

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

- local meteorology;
- terrain characteristics; and,
- location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

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

Recorded wind speeds and directions are described in the **Air Quality** section 5.1 of the Application for Certification (AFC) (SERC 2016a). Staff agrees that the applicant's proposed meteorological input assumptions for modeling of potential accidental hazardous material releases that would use the U.S. Environmental Protection Agency's *RMP Offsite Consequence Analysis Guidance* document which assumes environmental conditions of F stability (stagnated air, very little mixing), wind speed of 1.5 meters per second, and the maximum temperature recorded in the area in the last three years, is appropriate for conducting the worst-case off-site consequence analysis (SERC 2016b, Appendix 5.5).

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 topography in the Stanton project area is virtually flat with a gently sloping coastal plain that drains toward the Pacific Ocean (SERC 2016a).

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 an elementary school on Dale Avenue, approximately 0.3 miles to the north. The nearest residents would be approximately 500 feet to the southeast.

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 (SERC 2016a, Table 5.5-1 and Table 5.5-2) were evaluated. Staff's analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. To accomplish this goal, staff utilized the current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

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

Staff reviewed the applicant's proposed engineering and administrative controls concerning hazardous materials usage. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or which can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that would help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the 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 **Hazardous Materials Management** section of this FSA. 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 FSA 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 a less than significant level, staff would propose additional prevention and response controls until the potential for causing harm to the public is reduced to a less than significant 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.

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 Stanton) 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, lithium ion batteries, 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 between 5 to 14 percent. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 2012), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas. Natural gas can explode under certain confined conditions as demonstrated by the natural gas explosion at the Kleen Energy power plant in Middletown, Connecticut in February 2010 (Chemical Safety Board (US CSB) 2010).

On June 28, 2010, the United States Chemical Safety and Hazard Board (US CSB) issued Urgent Recommendations to the United States Occupational Safety and Health Administration (OSHA), the NFPA, the American Society of Mechanical Engineers (ASME), and major gas turbine manufacturers, to make changes to their respective regulations, codes, and guidance to require the use of inherently safer alternatives to natural gas blows for the purposes of pipe cleaning (US Chemical Safety Board 2010). Recommendations were also made to the 50 states to enact legislation applicable to power plants that prohibits flammable gas blows for the purposes of pipe cleaning.

In accordance with those recommendations, staff proposes Condition of Certification **HAZ-9**, which prohibits the use of flammable gases for pipe cleaning (gas blows) at the facility, including during construction and after the start of operations. Fuel gas pipe cleaning and purging shall adhere to the provisions of the latest edition of NFPA 56, the Standard for Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping Systems, with special emphasis on sections 4.4.1 (written procedures for pipe cleaning and purging) and 6.1.1.1 (prohibition on the use of flammable gas for cleaning or purging at any time).

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered by SoCalGas via a proposed new gas pipeline to a proposed new gas metering station on site (SERC2018i, page 2). The proposed route would be to install a new 2.75-mile pipeline north along Dale Avenue and connect to an existing gas pipeline on La Palma Avenue.

The impacts of the proposed pipeline need to be evaluated since the proposed facility would require the installation of a new 2.75 mile 12-inch or 16-inch off-site gas pipeline. The design of the natural gas pipeline is governed by laws and regulations discussed here. These LORS require use of high quality arc welding techniques by certified welders and inspection of welds. Many failures of older natural gas lines have been associated with poor quality welds, or corrosion. Current codes address corrosion failures by requiring the use of corrosion resistant coatings and cathodic corrosion protection. Another major cause of pipeline failure is damage resulting from excavation activities near pipelines.

Current codes address this mode of failure by requiring clear marking of the pipeline route. An additional mode of failure is damage caused by earthquakes. Existing codes also address seismic hazard in design criteria (see discussion below). Evaluation of pipeline performance in recent earthquakes indicates that pipelines designed to modern codes perform well in seismic events while older lines frequently fail. Staff believes that existing regulatory requirements are sufficient to reduce the risk of accidental release from the pipeline to a less than significant level.

Failures of gas pipelines, according to data from the U.S. Department of Transportation (the National Transportation Safety Board) from the period 1984 – 1991 and data from the National Response Center for the period 1990 - 2004, occur as a result of pipeline corrosion, pipeline construction or materials defects, rupture by heavy equipment excavating in the area such as bulldozers and backhoes, weather effects, and earthquakes.

Given the gas line failures which occurred in the Marina District of San Francisco during the 1989 Loma Prieta earthquake, the January 1994 Northridge earthquake in Southern California, the January 1995 gas pipeline failures in Kobe, Japan, the January 19, 1995 gas explosion in San Francisco, the pipeline explosion in Belgium in July 2004, and the pipeline rupture and fire in San Bruno, California in September 2010, the safety of the gas pipeline is of paramount importance. However, it must be noted that those pipelines which failed from 1989 to 1995 were older and not manufactured or installed to modern code requirements. Similarly, the pipeline which failed in San Bruno, California in 2010 was installed in 1956 before modern quality control methods were available, and was placed in a location where newer in-ground defect detection methods could not be used. The February 2001 Nisqually Earthquake near Olympia, Washington caused no damage to natural gas mains and there was only one reported gas line leak due to a separation of a service line going into a mobile home park. The 2004 Belgium gas pipeline explosion was due to construction equipment rupturing the line, not due to earthquake or structural failure.

If loss of containment occurs as a result of pipe, valve, or other mechanical failure or external forces, significant quantities of compressed natural gas could be released rapidly. Such a release could result in a significant fire and/or explosion hazard, which could cause loss of life and/or significant property damage in the vicinity of the pipeline route. However, the probability of such an event is extremely low if the pipeline is constructed according to current standards.

According to DOT statistics, the frequency of reportable incidents is about 0.25 for all pipeline incidents per 1,000 miles per year or 2.5×10^{-4} incidents per mile per year. DOT has also evaluated and categorized the major causes of pipeline failure. To summarize, the four major causes of accidental releases from natural gas pipelines are: Outside Forces - 43%, Corrosion -18%, Construction/Material Defects -13%, and Other - 26%.

Outside forces are the primary causes of incidents. Damage from outside forces includes damage caused by use of heavy mechanical equipment near pipelines (e.g., bulldozers and backhoes used in excavation activities), weather effects, vandalism, and earthquake-caused rupture as seen in the Marina District of San Francisco during the 1989 Loma Prieta Quake and in Kobe, Japan in January 1995.

The fourth category, “Other” includes equipment component failure, compressor station failures, operator errors and sabotage. The average annual service incident frequency for natural gas transmission systems varies with age, the diameter of the pipeline, and the amount of corrosion.

Older pipelines have a significantly higher frequency of incidents. These result from the lack of corrosion protection and use of less corrosion resistant materials compared to modern pipelines, limited use of modern inspection techniques, and higher frequency of incidents involving outside forces. The increased incident rate due to outside forces is the result of the use of a larger number of smaller diameter pipelines in older systems, which are generally more easily damaged and the uncertainty regarding the locations of older pipelines.

The safety requirements for pipeline construction vary according to the population density and land use, which characterize the surrounding land. The pipeline classes are defined as follows (Title 49, Code of Federal Regulations, Part 192.5):

Class 1: Pipelines in locations within 220 yards of ten or fewer buildings intended for human occupancy in any 1-mile segment.

Class 2: Pipelines in locations within 220 yards of more than ten but fewer than 46 buildings intended for human occupancy in any 1-mile segment. This class also includes drainage ditches of public roads and railroad crossings.

Class 3: Pipelines in locations within 220 yards of more than 46 buildings intended for human occupancy in any 1-mile segment, or where the pipeline is within 100 yards of any building or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period

(the days and weeks need not be consecutive). (The proposed project gas pipeline would fall into this class.)

Class 4: Pipelines in locations within 220 yards of buildings with 4 or more stories above ground in any 1-mile segment.

In the United States, extensive federal and state pipeline codes and safety enforcement minimize the risk of severe accidents related to natural gas pipelines. In November 2000, the DOT Office of Pipeline Safety proposed a program requiring the preparation of risk management plans for gas pipelines throughout the United States. These risk management plans will include the use of diagnostic techniques to detect internal and external corrosion or cracks in pipelines and to perform preventive maintenance. The pipeline owner will be required to develop and implement these plans as per the regulation adopted May 2004 (49 CFR Part 192). The regulations prescribe minimum requirements for a pipeline Integrity Management Program to be prepared and followed by every operator of a pipeline segment located in a high consequence area. A high consequence area is defined as any location where the pipeline traverses a Class 3 or 4 area (see above) or other areas under specified circumstances.

The integrity management program must contain the required elements as described in section 192.911 including an identification of all high consequence areas, a baseline assessment plan including methods of assessing pipeline integrity and a schedule for completing the assessment, an identification of threats to each pipeline segment including a risk assessment, an evaluation of mitigation measures, implementation procedures, and monitoring procedures. The regulations also include requirements for reassessment intervals, which range from 7 to 20 years depending on the type of reassessment and the operating percentage of the pipeline.

The following safety features would be incorporated into the design and operation of the natural gas pipeline (as required by current federal and state codes):

1. while the pipeline will be designed, constructed, and tested to carry natural gas at a certain pressure, the working pressure would be less than the design pressure;

2. butt welds would be X-rayed and the pipeline would be tested with water prior to the introduction of natural gas into the line;

3. the pipeline would be surveyed for leakage annually;

4. the pipeline would be marked to prevent rupture by heavy equipment excavating in the area; and

5. valves at the meter would be installed to isolate the line if a leak occurs.

These requirements would be administered by the federal government and the CPUC.

The natural gas pipeline for the project would be designed for Class 3 service and would meet all standards of the California Public Utilities Commission (CPUC) General Order 112-D and 58-A standards as well as all federal regulations. CPUC General Order 112-E, Section 125.1 requires that at least 30 days prior to the construction of a new pipeline, the owner must file a report with the commission that would include a route map for the pipeline. The natural gas pipeline would be constructed and operated in accordance with the Federal Department of Transportation (DOT) regulations, Title 49, Code of Federal Regulations (CFR), Parts 190, 191, and 192 (see Table 1 LORS). Staff has reviewed the federal, state and local LORS and concludes that they are sufficient to ensure minimal risks of failure of a new gas pipeline. Additionally, the new gas metering station is located entirely on-site, which greatly reduces the risks of impacts to the public from a rupture or failure.

The risk of an on-site fire and/or explosion resulting from the usage of natural gas can be reduced to less than significant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The 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 and other industry best practices 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.

Lithium Ion Batteries

Two 8.6 MW/4.3 MWh lithium ion battery energy storage systems would be installed at the Stanton site. The two energy storage systems would be contained within two separate equipment enclosures rated for outdoor service. The enclosures would not have any internal walkways or internal personnel access ways. The enclosures would not be occupied space and all maintenance activities would be conducted from the exterior via removable panels or doors that can be opened to the outside. The individual lithium ion batteries would be configured in multipacks in battery storage racks. The lithium ion batteries temperature would be continuously monitored by a battery indication and control system. If any battery begins to rise above a certain temperature set point, the battery control system would shut down portions or all of the battery enclosure to prevent the start of a fire. In the case of a fire, an inert gas fire suppression system would activate to completely fill the enclosure to help put out the fire (SERC 2017b).

The principal hazards associated with the lithium ion batteries are fire or explosion. Either could occur if the battery casing was opened or punctured or if the battery short circuits or overheats. Contact with the internal contents of the battery can cause skin and eye irritation. The electrolyte used inside the batteries is flammable and may vent or ignite. Burning batteries may also release toxic gases, including hydrogen fluoride gas (U.S. Department of Transportation (US DOT) 2016). Please see **Worker Safety and**

Fire Protection for a thorough discussion of lithium ion battery impacts, proposed mitigation, and worker training.

Aqueous Ammonia

Aqueous ammonia would be used to control the emission of NO_x from the combustion of natural gas at Stanton. The accidental release of aqueous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. Stanton would have 19-percent aqueous ammonia solution in a new 5,000-gallon vertical, above-ground storage tank (SERC 2016a, Section 5.5.2.3.2). Actual storage would be limited to 4,250 gallons or 85 percent of tank capacity. Based on staff's analysis described above, aqueous ammonia is the only hazardous material that may pose a risk of off-site impact. The use of aqueous ammonia can result in the formation and release of toxic gases (Lees 2012) in the event of a spill even without interaction with other chemicals. This is a result of its moderate vapor pressure and the large amounts of aqueous ammonia that would be used and stored on site. However, the use of aqueous ammonia poses 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 a potential 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.

Section 5.5.2.4.1 (SERC 2016a) and Appendix 5.5A (SERC 2016b) of the AFC describe the modeling parameters that the project proposes to use 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 would be performed for the worst-case release scenario, which would involve the failure and complete discharge of the storage tank. Ammonia emissions from the potential release scenario would be calculated following methods provided in the RMP off-site consequence analysis guidance (US EPA, April 1999).

Potential off-site ammonia concentrations would be estimated indicating the distance from the source release point to the benchmarks of ammonia concentration.

Staff reviewed the applicant's proposed aqueous ammonia storage facility description and OCA results (SERC 2016a, Appendix 5.5A). The applicant proposes installing (3) 2-feet by 6-inch openings in the center of the secondary containment that lead to an underground vault. The secondary containment would be sloped to ensure that any aqueous ammonia would transfer down to the underground vault. The openings into the vault would reduce the effective surface area of the secondary containment limiting the evaporation rate of the aqueous ammonia. Staff verified the applicant's OCA results using the Areal Locations of Hazardous Atmospheres (ALOHA) modeling software. Staff's modeling using ALOHA indicated that in the event of a worst-case release, the threshold of 75 ppm would not migrate off site. Staff, therefore, concurs with the applicant's modeling and determination that a potential worst-case spill of aqueous ammonia would not pose a significant risk to off-site members of the public.

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

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

Engineering Controls

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

- construction of secondary containment areas surrounding each of the hazardous materials storage areas, designed to contain accidental releases that might happen during storage or delivery;
- physical separation of stored chemicals in isolated containment areas with a non-combustible partition in order to prevent accidental mixing of incompatible materials, which could result in the evolution and release of toxic gases or fumes;
- installation of a fire protection system for hazardous materials storage areas;
- construction of a concrete containment area surrounding the aqueous ammonia storage tank with an underground vault, capable of holding the entire tank volume plus the water associated with a 24-hour period of a 25-year storm;
- construction of a sloped ammonia delivery truck unloading pad that drains into the storage tank's secondary containment structure; and
- process protective systems including continuous tank level monitors, automated leak detectors, temperature and pressure monitors, alarms, and emergency block valves.

Administrative Controls

Administrative controls also help prevent accidents and releases (spills) from 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 Condition 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, secondary containment, and underground vault 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 Stanton would be from Station No. 46 of the OCFA. If needed, a full hazardous materials response team would be provided from OCFA Station No. 79. Staff finds that the OCFA response team would be capable of responding to a hazardous materials emergency call from Stanton.

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 State Road 91, exiting on Beach Boulevard and traveling south to Katella Avenue, then east on Katella Avenue and turn left and head north on Dale Avenue to the Stanton entrance (SERC 2016a, Section 5.12.2.3). During a public workshop held on April 18 2018, the applicant requested that staff consider allowing hazardous material delivery starting from Interstate 5 in addition to SR 91. I-5 is approximately one mile north of SR 91 and the hazardous materials delivery would be required to exit onto Beach Boulevard and follow the rest of the original proposed route from SR 91.

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

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

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main freeway SR 91 and I-5. 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 Stanton project would require one to two ammonia deliveries every few months (SERC 2016a, Section 5.5.2.3.2). Each delivery would travel approximately 4.4 miles from SR 91 or 5.2 miles from I-5 to the facility.

This would result in a maximum of 10 miles of tanker truck travel in the project area per month during peak operation (with a full load) and an average of approximately 119 miles of tanker truck travel per year (assuming two deliveries per month). Staff has determined that the risk over this distance is less than significant.

In addition, staff used a transportation risk assessment model (Harwood 1993, Brown 2000 & Guidelines for Chemical Transportation Risk Analysis 1995) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from the highway to the facility via Beach Boulevard to Katella Avenue to Dale Avenue. Results show a risk of about one in 295,000 for one trip from SR 91 and a total annual risk of about one in 59,000 for approximately 5 deliveries over a year. This risk was calculated using accident rates on various types of roads (in this case, urban multilane undivided) with distances traveled on each type of road computed separately. Although it is an extremely conservative model in that it includes accident rates per million mile of highway trucking as a mode of transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes, the results still show that the risk of a transportation accident is less than significant.

The addition of the I-5 route for hazardous material delivery would add approximately one mile to the currently proposed route. The additional mile is a continuation of Beach Boulevard which is an urban multilane undivided road and would not increase the likelihood of an accidental transportation release. Therefore, staff concludes that the risk of a transportation accident is less than significant from I-5.

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

In order to further ensure that the risk of an accident involving the transport of aqueous ammonia to the power plant is less than significant, staff proposes Condition of Certification **HAZ-6**, which would require the use of only the specified and California Highway Patrol-approved route for delivery of hazardous materials to the site.

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

Seismic Issues

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

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused both to several large storage tanks and to smaller tanks associated with the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Staff reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks failed as a result of that earthquake. Staff has also reviewed the impacts of the recent earthquakes in Haiti (January 12, 2010; magnitude 7.0) and Chile (February 27, 2010; magnitude 8.8). The building standards in Haiti are not as stringent 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) of the most recent (2016 or later) California Building Code (SERC 2016a, Appendix 2A).

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 Stanton would comply with stringent California Building Codes, staff determines that tank failures during seismic events are not probable and do not represent a significant risk to the public.

Site Security

The applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a) and the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002). The North American Electric Reliability Corporation (NERC) published an updated *Security Guideline for the Electricity Sector: Physical Security* (2011) and the U.S. Department of Energy (U.S.DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002).

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

The applicant has stated that a security plan would be prepared for the proposed facility and would include a description of perimeter security measures and procedures for evacuating, notifying authorities of a security breach, monitoring fire alarms, conducting site personnel background checks, site access, and a security plan and background checks for hazardous materials drivers. Perimeter security measures utilized for this facility may include security guards, security alarms, breach detectors, motion detectors, and video or camera systems (SERC 2016a, Section 5.5.4.2.5).

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

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

In order to determine the level of security, Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Corporation's (NERC) 2011 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of medium vulnerability due to the urban setting and close proximity to sensitive receptors. Staff therefore proposes that certain security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

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

The proposed plant would normally be unmanned, having personnel on-site only for maintenance activities and to accept deliveries. The applicant has proposed that local duty personnel would be on-call 24 hours per day, 7 days a week, and capable of arriving on-site within 90 minutes or less to communicate and coordinate response actions with emergency personnel when needed (SERC 2017h). In a communication with staff, the OCFA requested that there be a 30-minute maximum response time for the first Stanton power plant employee to arrive on site (OCFA 082917). Staff concurs that the OCFA's request for a 30-minute time limit for a Stanton representative to arrive on-site is reasonable and appropriate. Depending upon the nature of any emergency incident, the fire department may have to wait for assurance from Stanton personnel that remotely dispatched and controlled systems have been disabled and de-energized

before entering the site or initiating mitigating actions. A delay of an hour could possibly allow an incipient fire or hazardous materials incident to escalate into one having potential to impact the surrounding community. Therefore, staff proposes **HAZ-8** to ensure that Stanton's personnel would be available within 30 minutes of an emergency response or incident.

CUMULATIVE IMPACTS AND MITIGATION

Staff analyzed the potential for the existence of cumulative impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. Staff has determined that while cumulative impacts are theoretically possible, they are not probable because of the many safeguards implemented to both prevent and control an uncontrolled release. The chances of one uncontrolled release occurring are remote. The chance of two or more occurring simultaneously, with resulting airborne plumes comingling to create a significant impact, are even more remote. Staff concludes that the risk to the public would be less than significant.

The applicant would develop and implement a hazardous materials handling program for Stanton independent of any other projects considered for potential cumulative impacts. Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, poses a minimal risk of accidental release that could result in off-site impacts. It is unlikely that an accidental release that has very low probability of occurrence (about one in one-million per year) would independently occur at the Stanton site and another facility at the same time. Therefore, staff concludes that the facility would not contribute to a significant hazardous materials-related cumulative impact.

ENVIRONMENTAL JUSTICE

As discussed in the **Environmental Justice** section of this FSA, 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**). **Environmental Justice Figure 2** and **Table 3** show that the population receiving free or reduced price meals in all of the school districts with the exception of Los Alamitos Unified, Cypress Elementary, and ABC Unified school districts constitute an EJ population based on a low income population. Due to the presence of an EJ population, this analysis must identify whether the construction and operation of the proposed Stanton facility would have significant, unmitigated, or disproportionate impacts on an EJ population.

Under the topic of hazardous materials management, the two potential incidents that could affect the EJ population would be (1) a worst case release from the aqueous ammonia storage tank and (2) a release of hazardous material during transportation by truck from SR 91 to the project site.

As for the first mentioned potential incident, the worst case release of the entire contents of the aqueous ammonia on-site storage tank, should it somehow occur even though a highly unlikely event, it would not impact any off-site receptors, including sensitive receptors, because staff's proposed Condition of Certification **HAZ-4** would mitigate the off-site impact to less than significant. Thus, the worst case incident, a total loss of contents of the aqueous ammonia tank, would pose a less than significant risk to the surrounding public and would not have a disproportionate impact on the EJ population.

As for the second mentioned potential incident, a spill from a truck delivering hazardous materials through EJ communities along Beach Boulevard to Katella Avenue to Dale Avenue for delivery to the project, while such an accident could potentially occur and involve either an aqueous ammonia or other hazardous material delivery truck, an accidental release of the hazardous materials cargo sufficient to cause a significant impact would still be very unlikely as described earlier in this technical section under the subtopic of Transportation of Hazardous Materials. Additionally, staff's proposed Conditions of Certification **HAZ-5** and **HAZ-6** would further reduce the risk of public impact resulting from transportation of hazardous materials to the Stanton site. Thus, the transportation of hazardous materials would pose a less than significant risk to the surrounding public and would not have a disproportionate impact on the EJ population.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of the Stanton 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.

RESPONSE TO PSA COMMENTS

Dayzen, LLC (Applicant), (TN#223293), April 30, 2018

Comment: *The applicant would like to modify the Condition of Certification **HAZ-4** to allow the use of an API 620 tank for the aqueous ammonia.*

Staff Response: Staff has modified the Condition of Certification **HAZ-4** to allow the use of an API 620-standard tank for aqueous ammonia. An API 620 tank would offer similar protections to an ASME tank. Historically, staff has allowed the option of the API 620 standard for aqueous ammonia tanks, where applicable.

Comment: *The applicant would like to modify the Condition of Certification **HAZ-6** to allow bulk hazardous materials deliveries from Interstate 5.*

Staff Response: Staff has modified the Condition of Certification **HAZ-6** to allow bulk hazardous materials from Interstate 5. Staff has included additional analysis demonstrating that the transportation risk from I-5 is less than significant. Therefore, staff has included the requested change.

Comment: *The applicant would like to modify the Condition of Certification **HAZ-7** to clarify that the plant need only provide security personnel during hours when no construction personnel would be present.*

Staff Response: Staff concurs with the clarification and has added the language to Condition of Certification **HAZ-7**.

Public Comment, (TN #215090), December 21, 2016

Comment: *The northern gas route along Dale would run within 300 feet of my house. It would also run within close proximity to Pyle Elementary School, Dale Junior High School, Switzer Elementary School, the Buddhist church, the Greek Orthodox Church and the Braille Institute. All of these institutions would be impacted by the construction and the extremely flammable would be running directly in front of their premises.*

Staff Response: Staff analyzed the proposed 2.75-mile route of the off-site gas pipeline going along Dale Avenue to La Palma and determined that the risk and impact to the community would be less than significant. The route would be subject to applicable local, state, and federal requirements for pipeline construction and would be subject to the California Public Utility Commission (CPUC) oversight. For more information on how staff came to this determination please refer to **Hazardous Materials Management** pages 4.5-8 through 4.5-12.

Orange County Fire Authority, (TN#223289), April 30, 2018

Comment: *The aqueous ammonia storage system to include: leak detection and a spill containment underground sump.*

Staff Response: Please refer to the Condition of Certification **HAZ-4** which includes the design requirements for ammonia leak detectors and a secondary containment that drains to a covered sump.

CONCLUSIONS

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** would require that an RMP be submitted for concurrent review by the OCEHD and by the CPM, and to be approved by the CPM prior to the delivery of aqueous ammonia. Condition of Certification **HAZ-3** would require the development of a safety management plan for the delivery of all liquid hazardous materials, including aqueous ammonia. Condition of Certification **HAZ-4** requires that the aqueous ammonia storage

tank be designed to appropriate safety standards. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-5** and **HAZ-6**. Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-7** and **HAZ-8.** Condition of Certification **HAZ-9** addresses the use of natural gas and prohibits its use to clear pipes.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in Appendix B, below, or in greater quantities or strengths than those identified by chemical name in Appendix B, below, unless approved in advance by the compliance project manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, the Hazardous Materials Business Plan's list of hazardous materials and quantities contained at the facility.

HAZ-2 The project owner shall concurrently provide a Hazardous Materials Business Plan (HMBP), a Spill Prevention Control and Countermeasure Plan (SPCC), and a Risk Management Plan (RMP) to the Orange County Environmental Health Division (OCEHD) and the CPM for review. After receiving comments from the OCEHD 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 OCEHD for information and to the CPM for approval.

Verification: At least 30 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final HMPB and SPCC to the CPM for approval.

At least 30 days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the Certified Unified Program Agency (the Orange County Environmental Health Division) for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least 30 days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed either to the ASME Code for Unfired Pressure Vessels, Section VIII, Division 1 or to the API Standard 620. The storage tank shall be protected by a secondary containment that drains to an underground vault via (3) 1 square foot openings 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 storage tank shall have ammonia detectors positioned to detect an ammonia leak or loss of containment. The final design drawings and specifications for the ammonia storage tank, secondary containment basin, and underground vault shall be submitted to the CPM.

Verification: At least 30 days prior to start of construction of the aqueous ammonia storage and transfer facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank, ammonia pumps, ammonia detectors around the ammonia storage tank, secondary containment basin, and underground 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 that meet or exceed the specifications of MC-307/DOT-407.

Verification: At least 30 days prior to receipt of aqueous ammonia on site, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-6 Prior to initial delivery, the project owner shall direct vendors delivering bulk quantities (>800 gallons per delivery) of hazardous material (e.g., aqueous ammonia, lubricating and insulating oils) to the site to use only the route approved by the CPM (from Interstate 5 or State Route 91, exiting on Beach Boulevard and traveling south to Katella Avenue, then east on Katella Avenue and turn left and head north on Dale Avenue to the Stanton entrance). The project owner shall obtain approval of the CPM if an alternate route is desired.

Verification: At least 60 days prior to initial receipt of bulk quantities (>800 gallons per delivery) of hazardous materials (e.g., aqueous ammonia, lubricating and insulating oils) and at least 10 days prior to a new vendor delivery of bulk quantities (>800 gallons per delivery), the project owner shall submit a copy of the letter containing the route restriction directions that were provided to the hazardous materials vendor to the CPM for review and approval.

HAZ-7 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Site Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;

2. security guards during hours when construction personnel are not present at the site;

3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;

4. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;

5. protocol for contacting law enforcement and the CPM in the event of suspicious activity, incident or emergency; and,

6. evacuation procedures.

Verification: At least 30 days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that would be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC Security Guideline for the Electricity Sector: Physical Security v2.0).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high and topped with barbed wire or the equivalent (and with slats or other methods to restrict visibility if a fence is selected);

2. main entrance security gate, either hand operated or motorized;

3. evacuation procedures;

4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;

   A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the

CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;

6. site access controls for employees, contractors, vendors, and visitors;

7. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

8. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the remote power plant control room with cameras able to pan, tilt, and zoom, have low-light capability, and able to view 100 percent of the perimeter fence, the ammonia storage tank, the two outside entrances to the site; and,

9. additional measures to ensure adequate perimeter security consisting of either:

   A. perimeter breach detection or on-site motion detector capabilities; and

   B. security guard(s) present 24 hours per day, seven days per week; **or**

   C. power plant personnel on site 24 hours per day, seven days per week; **or**

   D. continuous remote monitoring 24 hours per day, seven days per week, with local duty personnel on-call 24 hours per day, seven days per week, and capable of coordinating emergency response actions with emergency personnel and of arriving on-site within 30 minutes or less.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Corporation, after consultation with both appropriate law enforcement agencies and the project owner.

Verification: At least 30 days prior to the initial receipt of hazardous materials on site, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include signed statements similar to Attachments A and B that all current project employee and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the

operations security plan. In the annual compliance report, the project owner shall include a signed statement similar to Attachment C that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-9: The project owner shall not allow any fuel gas pipe cleaning activities on site, either before placing the pipe into service or at any time during the lifetime of the facility, that involve “flammable gas blows” where natural (or flammable) gas is used to blow out debris from piping and then vented to atmosphere. Instead, an inherently safer method involving a non-flammable gas (e.g. air, nitrogen, steam) or mechanical pigging, shall be used as per the latest edition of NFPA 56, Standard for Fire and Explosion Prevention during Cleaning and Purging of Flammable Gas Piping Systems. A written procedure shall be developed and implemented as per NFPA 56, section 4.4.1.

Verification: At least 30 days before any fuel gas pipe cleaning activities begin, the project owner shall submit a copy of the Fuel Gas Pipe Cleaning Work Plan (as described in the 2014 NFPA 56, section 4.4.1) which shall indicate the method of cleaning to be used, what gas will be used, the source of pressurization, and whether a mechanical PIG will be used, to the CBO for information and to the CPM for review and approval.

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I,

_____

(Name of person signing affidavit) (Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for employment at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I,

_____

(Name of person signing affidavit) (Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____

(Company name)

for contract work at

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit) (Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____

(Company name)

for hazardous materials delivery to

_____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

REFERENCES

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SERC 2016b – Stanton Energy Reliability Center, LLC (TN 214207-1 to 37). Application for Certification Vol.2, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC2017b – CH2M/Applicant Consultant (TN 217461). Stanton Energy Reliability Center Application for Certification Data Request Response, Set 1 (A1-A63). Submitted to CEC/Docket Unit on May 5, 2017.

SERC 2017h – DayZen LLC (TN 220620). Stanton Energy Reliability Center, LLC Proposed Modifications to Condition of Certification HAZ-8. Submitted to CEC/Docket Unit on August 9, 2017.

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U.S. Department of Justice (US DOJ) 2002. Special Report: Chemical Facility Vulnerability Assessment Methodology. Office of Justice Programs, Washington, D.C. July 2002.U.S. Department of Transportation (US DOT) 2016. Emergency Response Guidebook. A Guidebook for First Responders During the Initial Phase of a Dangerous Goods/Hazardous Materials Transportation Incident.

HAZARDOUS MATERIALS
APPENDIX A

Basis for Staff's Use of 75 Parts Per Million Ammonia Exposure Criteria

BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, not exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. The California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

Hazardous Materials Appendix A Table-1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible Injury, or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of ten for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated eight-hour work shifts.
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	150 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

AIHA 1989. American Industrial Hygienists Association, Emergency Response Planning Guideline, Ammonia, (and Preface) AIHA, Akron, OH.

EPA 1987. U.S. Environmental Protection Agency, Technical Guidance for Hazards Analysis, EPA, Washington, D.C.

NRC 1985. National Research Council, Criteria and Methods for Preparing Emergency Exposure Guidance Levels (EEGL), Short-Term Public Emergency Guidance Level (SPEGL), and Continuous Exposure Guidance Level (CEGL) documents, NRC, Washington, D.C.

NRC 1972. Guideline for Short-Term Exposure of the Public to Air Pollutants. IV. Guide for Ammonia, NRC, Washington, D.C.

NIOSH 1994. National Institute of Occupational Safety and Health, Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Washington D.C., Publication numbers 94-116.

WHO 1986. World Health Organization, Environmental Health Criteria 54, Ammonia, WHO, Geneva, Switzerland.

ABBREVIATIONS - HAZARDOUS MATERIALS APPENDIX A, TABLE 1

ACGIH	American Conference of Governmental and Industrial Hygienists
AIHA	American Industrial Hygienists Association
EEGL	Emergency Exposure Guidance Level
EPA	Environmental Protection Agency
ERPG	Emergency Response Planning Guidelines
IDLH	Immediately Dangerous to Life and Health Level
NIOSH	National Institute of Occupational Safety and Health
NRC	National Research Council
STEL	Short Term Exposure Limit
STPEL	Short Term Public Emergency Limit
TLV	Threshold Limit Value
WHO	World Health Organization

HAZARDOUS MATERIALS
APPENDIX B

Hazardous Materials Proposed for Use at Stanton
Hazardous Materials Appendix B

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 ammonia NH3 (19 percent NH3 by weight)	Aqueous ammonia	7664-41-7	5,000 gallons[g]	100 lbs	526 lbs	500 lbs	500 lbs	No
Cleaning chemicals/detergents	Various	None	110 gallons	[e]	[e]	[e]	[e]	No
Hydraulic oil	Oil	None	190 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Laboratory reagents	Various	Various	10 gallons	[e]	[e]	[e]	[e]	No
Synthetic lubricating oil	Oil	None	1,610 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Mineral lubricating oil	Oil	None	3,000 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Mineral insulating oil	Oil	8012-95-1	14,400 gallons	42 gallons[f]	42 gallons[f]	[e]	[e]	No
Sulfur hexafluoride	Sulfur hexafluoride	2551-62-4	45 lbs	[e]	[e]	[e]	[e]	No
Acetylene	Acetylene	47-86-2	600 cu ft	[e]	[e]	[e]	[e]	No
Oxygen	Oxygen	7782-44-7	600 cu ft	[e]	[e]	[e]	[e]	No
Propane	Propane	74-98-6	200 lbs	[e]	[e]	[e]	[e]	No
EPA Protocol gases	Various	Various	8,000 cu ft	[e]	[e]	[e]	[e]	No
Cleaning chemicals	Various	Various	Varies (less than 25 gallons liquids or 100 lbs solids for each chemical)	[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
Paint	Various	Various	Varies (less than 25 gallons liquids or 100 lbs solids for each type)	e	e	e	e	No
FM-200	FE-227	431-89-0	1,560 lbs	e	e	e	e	No
CO2	CO2	53569-62-3	24,500 cu ft	e	e	e	e	No
Lead-acid batteries (and/or nickel-cadmium batteries)	Lead-acid and/or nickel-cadmium batteries	Various	5,000 lbs	1,000	1,000	1,000	1,000	Yes
Lithium ion batteries	Lithium Ion Batteries	96-49-1 105-58-8	252 tons	e	e	e	e	No

[a] RQs for a pure chemical, per the CERCLA SARA (Ref. 40 CFR 302, Table 302.4). Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

[b] RQ for materials as used onsite. Because some of the hazardous materials are mixtures that contain only a percentage of an RQ, the RQ of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 lbs., the RQ for that material would be (100 lb)/(10 percent) = 1,000 lb.

[c] EHS TPQ (Ref. 40 CFR Part 355, Appendix A). If quantities of extremely hazardous materials equal to or greater than the TPQ are handled or stored, they must be registered with the local Administering Agency.

[d] TQ is from 19 CCR 2770.5 (state) or 40 CFR 68.130 (federal).

[e] No reporting requirement. Chemical has no listed threshold under this requirement.

[f] State Reporting Quantity (RQ) for oil spills that will reach California state waters (Ref. CA Water Code Section 13272(f)).

[g] The NH_3 tank capacity is 5,000 gallons; however, the tank is only filled to 85 percent of its capacity, or 4,250 gallons. Notes:

CCR = California Code of Regulations

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

CFR = Code of Federal Regulations

EHS = Extremely Hazardous Substance

SARA = Superfund Amendments and Reauthorization Act

TQ = Threshold Quantity

LAND USE

Testimony of Mark R. Hamblin

SUMMARY OF CONCLUSIONS

The Stanton Energy Reliability Center (Stanton) would neither result in, nor contribute substantially to, any significant direct, indirect, or cumulative land use impacts, including disproportionate impacts to an environmental justice population.

The Stanton project would be compatible with present and expected land uses and in conformance with applicable land use and planning laws, ordinances, regulations, and standards including the city of Stanton's General Plan and Zoning Code with findings in support of the issuance of a conditional use permit and a variance by the California Energy Commission.

INTRODUCTION

Staff evaluates the proposed project using the California Environmental Quality Act (CEQA) Guidelines Appendix G Agriculture and Forestry Resources, and Land Use and Planning, and explains if the project would be in conformance with applicable, "land use and planning" related laws, ordinances, regulations, and standards (LORS) as required by the Warren-Alquist Act, Chapter 6, Power Facility and Site Certification.

LAND USE AND PLANNING

"Land Use refers to the manner of utilization of land, including its allocation, development, and management. Land Use Planning refers to the rational and judicious approach of allocating available land resources to different land using activities and for different functions consistent with the overall development vision/goal of a particular city [or county]." "[It] [r]efers to a document embodying a set of policies accompanied by maps and similar illustrations which represent the community desired pattern of population distribution and a proposal for the future allocation of land to the various land-using activities." (Lagman 2012)

California Land Use and Planning Law

California Planning and Zoning Law codified in California Government Code (Gov. Code), section (§) 65000 et sequentes (and the following or et seq.) includes "…each county and city shall adopt a comprehensive, long term general plan for the physical development of the county or city, and of any land outside its boundaries…." (Gov. Code, § 65300) Counties and cities adopt a document (the General Plan) embodying a set of policies accompanied by diagrams, illustrations, and maps that represent their particular proposal for the future allocation of land to the various land-using activities and pattern of population distribution.

State Zoning Law (Gov. Code, § 65850 et seq.) applies to all counties and general law cities. Zoning ordinances must be consistent with the city/county general plan and any applicable specific plan. (Gov. Code, § 65860) Counties and cities may adopt ordinances that do any of the following:

"(a) Regulate the use of buildings, structures, and land as between industry, business, residences, open space, including agriculture, recreation, enjoyment of scenic beauty, use of natural resources, and other purposes.

(b) Regulate signs and billboards.

(c) Regulate all of the following:

(1) The location, height, bulk, number of stories, and size of buildings and structures.

(2) The size and use of lots, yards, courts, and other open spaces.

(3) The percentage of a lot which may be occupied by a building or structure.

(4) The intensity of land use.

(d) Establish requirements for offstreet parking and loading.

(e) Establish and maintain building setback lines.

(f) Create civic districts around civic centers, public parks, public buildings, or public grounds, and establish regulations for those civic districts." (Gov. Code, § 65850)

Land Use Compatibility

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).

A main purpose of the Energy Commission power facility and site certification process is to ensure that a thermal power plant does not negatively affect the public health, safety, or general welfare, constitute a nuisance, or be materially detrimental to the improvements, persons, property, or uses in the zone and vicinity where the project is sited. Energy Commission staff performs independent evaluations of a proposed project and proposes conditions of certification on it if necessary. Conditions of certification are written stipulations either mitigating a potential "significant effect on the environment" as required by the CEQA Guidelines, or to achieve conformance with applicable LORS as required by the state Warren-Alquist Act, Chapter 6, Power Facility and Site Certification.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

In accordance with the Warren-Alquist Act, Chapter 6, Power Facility and Site Certification (California Public Resources Code [Pub. Resources Code] § 25525), staff identified applicable LORS reviewed for the project in **Land Use Table 1**. Staff identified no federal or state LORS applicable to the project. The project's conformance analysis with the city of Stanton LORS is in **Land Use Table 3**.

Land Use Table 1
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Description
Local	
City of Stanton General Plan	The General Plan is Stanton's fundamental policy document regarding community and economic development of the city. The General Plan describes Stanton's goals and strategies regarding land use, economic development, transportation, housing, open space/conservation, safety, public facilities, infrastructure, and community design. Along with these goals and strategies is an action guide geared toward implementing these goals and strategies.
City of Stanton Municipal Code, Title 20 Zoning	The Zoning Code carries out the policies of the Stanton General Plan by classifying and regulating the uses of land and structures within the city consistent with the General Plan. The Zoning Code promotes the public health, safety, comfort, convenience, prosperity, and general welfare of residents and businesses in the city. More specifically, the purposes of this Zoning Code are to: A. Provide standards and guidelines to ensure the city's continuing orderly growth and development and to assist in protecting its character and community identity; B. Promote conservation of energy and water resources and protection of air quality; C. Create a comprehensive and stable pattern of land uses upon which to plan energy, sewage, transportation, water supply, and other public facilities and utilities; D. Encourage development patterns that allow less reliance on motor vehicles for mobility and result in reduction in vehicle miles traveled and corresponding greenhouse gas emissions; and E. Ensure compatibility between different types of development and land uses.

SETTING

REGIONAL DESCRIPTION

The project site is located in the city of Stanton, county of Orange, California. The approximate three-square mile sized city borders the cities of Anaheim, Cypress, Garden Grove, and Westminster.

PROJECT, SITE, AND VICINITY DESCRIPTION

Stanton consists of two single combustion turbines with 70-foot tall flue gas stacks enclosed in architectural treatments, an integrated battery storage component, and associated facilities. Linear appurtenances would include a new approximately 0.35-mile underground 66-kilovolt generator tie-line running from the Stanton project site to the Barre Substation. Refer to the **Project Description** section of this staff assessment for additional details of the project.

Natural gas would be delivered to the Stanton site via a 2.75-mile-long pipeline extending north along Dale Avenue to La Palma Avenue.

The Stanton facility would occupy approximately four acres. The project site's eastern portion (Parcel 1) fronts Dale Avenue. It is undeveloped. The western portion (Parcel 2) has frontage on Pacific Street. Truck parking, wooden pallet storage, and two single story wood structures cover part of the site. **Land Use Figure 1** shows the project site from Dale Avenue.

To the north of the project site are overhead high voltage transmission power lines and towers within a transmission corridor; to the east are the Barre Substation, Barre Peaker plant (49-megawatts), transmission lines, towers and poles; to the south is a railroad track and self-storage facility, and the city of Stanton Corporate Yard is to the west. Single- and multi-family residences are farther west and to the southeast.

The project site is near the center of the city's main "Industrial" district. The district is generally located south of Cerritos Avenue, east of Beach Boulevard and the Union Pacific Railroad right-of-way, north of Katella Avenue, and west of Dale Avenue. The district contains a mix of uses that includes industrial, heavy commercial, and residential. (COS 2008, pp. 3-10–3-11) **Land Use Figure 2** shows an aerial view of the project site and vicinity.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Staff evaluates a proposed project according to provisions in CEQA codified in Pub. Resources Code § 21000 and following, and the CEQA Guidelines[1] codified in California Code of Regulations (Cal. Code Regs., tit. 14, § 15000 et seq.).

The CEQA Guidelines define a *significant effect on the environment* to mean "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance" (Cal. Code Regs., tit 14, § 15382).

[1] The CEQA Guidelines codified in the California Code of Regulations, title 14, division 6, chapter 3, section 15000-15387 and Appendices A-N.

Potential Project Effect

For this analysis, staff uses CEQA Guidelines Appendix G[2] Agriculture and Forestry Resources, and Land Use and Planning to assess the project's potential environmental effects:

Agriculture and Forestry Resources

"Would the project:

a) 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 of the California Resources Agency, to non-agricultural use?

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

c) 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))?

d) Result in the loss of forest land or conversion of forest land to non-forest use?

e) 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? "[3]

Land Use and Planning

"Would the project:

a) Physically divide an established community?

b) Conflict with any applicable land use plan, policy, or regulation of an agency with 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?

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?"[4]

[2] California Code of Regulations, Title 14, CEQA Guidelines Appendix G Environmental Checklist Form. The environmental checklist form is a sample form and may be tailored to satisfy individual agencies' needs and project circumstances. Substantial evidence of potential impacts that are not listed on this form must also be considered. The sample questions in the form are intended to encourage thoughtful assessment of impacts, and do not necessarily represent thresholds of significance.

[3] California Code of Regulations, Title 14, CEQA Guidelines Appendix G Environmental Checklist Form, II. Agriculture and Forestry Resources.

[4] California Code of Regulations, Title 14, CEQA Guidelines Appendix G Environmental Checklist Form, X. Land Use and Planning.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Agriculture and Forestry Resources

A. Would the project "[c]onvert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?"

The project would not convert farmland. The project site is designated "Industrial" as shown on the city General Plan Land Use Diagram. The project would have no impact on the environment under this criterion in the CEQA Guidelines.

B. Would the project "[c]onflict with existing zoning for agricultural use, or a Williamson Act contract?"

The project would not conflict with existing zoning for agricultural use or a Williamson Act contract. The project site is not in a Williamson Act contract. The project site is in the "Industrial General" (IG) zone as shown on the city Zoning Map. The project would have no impact on the environment under this criterion.

C. Would the project "[c]onflict 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))?"

The project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. The project site is in the IG zone as shown on the Zoning Map. No impact.

D. Would the project "[r]esult in the loss of forest land or conversion of forest land to non-forest use?"

The project would not result in the loss of forest land or conversion of forest land to non-forest use as there is none located on the project site. No impact.

E. Would the project "[i]nvolve 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 project would not involve other changes in the existing environment that could result in conversion of farmland or forest land. The project site is designated Industrial as shown on the General Plan Land Use Diagram and zoned IG. No impact.

Land Use and Planning

A. Would the project "[p]hysically divide an established community?"

The project would not physically divide an established community. The project would be *infill development.*[5] The project would cover a four-acre site within an industrial use area of the city that borders a high-voltage transmission line corridor (approximately 150 feet wide). Historic maps and photographs of this area indicate/show industrial type buildings, structures, and the transmission corridor since at least 1967. The area is zoned IG. The project would have a less than significant effect on the environment under this criterion in the CEQA Guidelines.

B. Would the project "[c]onflict with any applicable land use plan, policy, or regulation of an agency with 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?"

The project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.

The project site is designated Industrial as shown on the city General Plan Land Use Diagram. "The Industrial designation is intended to provide for a variety of industrial and office uses. Uses include manufacturing, processing, research and development, product assembly, storage, warehousing and distribution, and industrial services." (COS 2008, pp. 2-5–2-6)

The 2008 dated General Plan states "Stanton has very little vacant developable land, comprising less than 2% of the total area. . . . As in most developed cities, redevelopment is a primary goal to revitalize and provide for the expansion of economic opportunities." (COS 2008, p. 2-1)

The project site is zoned IG as shown on the city Zoning Map. "The IG zone is applied to areas appropriate for light industry and manufacturing, heavy commercial service-type facilities, and warehousing facilities that are not proposed to be located in a 'campus' type environment." (COS 2013, § 20.220.10)

[5] "Infill development is the process of developing vacant or under-used parcels within existing urban areas that are already largely developed. Most communities have significant vacant land within city limits, which, for various reasons, has been passed over in the normal course of urbanization." (MRSC 2017) "The term 'infill development' refers to building within unused and underutilized lands within existing development patterns, typically but not exclusively in urban areas." (OPR 2015).

The IG zone permits a "utility service facility"[6] (COS 2013, § 20.220.10) pending approval of a conditional use permit (CUP) by the reviewing authority. In this case, the reviewing authority will be the Energy Commission in accordance with the Commission's exclusive thermal power plant permitting authority (Pub. Resources Code, §§ 25000-25542).

The project would have a less than significant effect on the environment under this criterion.

C. Would the project "[c]onflict with any applicable habitat conservation plan or natural community conservation plan?"

The project site and accessory objects are not within the boundary of an approved United States Fish and Wildlife Service habitat conservation plan (HCP), nor within the boundary of an approved California Department of Fish and Wildlife natural community conservation plan (NCCP). No impact.

CUMULATIVE IMPACTS AND MITIGATION

Under the CEQA Guidelines cumulative impacts of the project must be discussed when the proposed project's incremental effect is "cumulatively considerable" (Cal. Code Regs., tit 14, § 15130, subd. (a)). "'Cumulatively considerable' means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (Cal. Code Regs., tit 14, § 15065 subd. (a)(3))

"Where a Lead Agency is examining a project with an incremental effect that is not 'cumulatively considerable,' a Lead Agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable." (Cal. Code Regs., tit 14, §15130, subd. (a))

Land Use Table 2 identifies the reasonably foreseeable development projects in the city of Stanton within approximately one-mile of the project site reviewed in this land use cumulative impact analysis.

[6] "Any fixed-base structure or facility that provides service of a regional nature and that may have a significant effect on surrounding uses. Includes generating plants and sources; electrical switching facilities and stations or substations; above-ground electrical distribution, service, and transmission lines; water reservoirs, flood control or drainage facilities, and water or wastewater treatment plants; and similar facilities of public agencies or public utilities that are not exempted from planning permit requirements by Government Code Section 53091. . . Examples of various utility service facilities include the following: . . . 2. Electric generating facility." (COS 2013, § 20.700.130)

Land Use Table 2
Cumulative Projects

ID#	Project Title	Description	Location	Distance to Stanton (Miles)	Status
1	PPD-780	Construction of a 2,418 square foot fast food restaurant with drive-through	7952 Cerritos Ave. and 10511-10529 Beach Blvd., Stanton	0.39	Tentative Completion - Summer 2017
2	PPD-774	Construction of a four unit condominium project	7921 Second St., Stanton	0.58	Building Plan Check
3	PPD-783	Two new commercial office buildings	10441/10425 Magnolia, Stanton	0.74	Still in entitlement process
4	PPD-777	Construct commercial development including a retail pad building, drive-through restaurant, gas station and a drive through car wash	11382, 11430 and 11462 Beach Blvd., Stanton	0.76	Building Plan Check

As to the incremental effect of the Stanton project when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects, staff concludes the following:

- The city of Stanton has no farmland or forest land, or agricultural use or forest land zoning that would be affected by the Stanton project and the identified cumulative projects. There are no executed Williamson Act contracts in the city of Stanton.
- The city of Stanton has very little vacant developable land, comprising less than 2 percent of the total area according to the City of Stanton General Plan, September 23, 2008. The Stanton project and cumulative projects are infill development. They would not physically divide an established community.
- The Stanton project and identified cumulative projects would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.
- Staff found no adopted habitat conservation plan or natural community conservation plan within the city of Stanton. The Stanton project and identified cumulative projects would not conflict with a conservation plan.

The Stanton project, in combination with other reasonably foreseeable development in the vicinity would not create a cumulatively considerable impact under CEQA Guidelines Appendix G Agriculture and Forestry Resources or Land Use and Planning. The cumulative impact would be less than significant.

ENVIRONMENTAL JUSTICE

Refer to the **Environmental Justice** section in this staff assessment for a full explanation of how staff determines an Environmental Justice (EJ) population. **Environmental Justice Figure 1** shows minority population by U.S. Census Block within a six-mile radius of the project site. **Environmental Justice Figure 2** shows an EJ population based on low income within a six-mile radius of the project site. **Environmental Justice Table 3** presents poverty and low-income data within the project area.

A disproportionate impact relating to land use to an EJ population could occur 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 to an EJ population, or physically divide an established population of an EJ population.

The project is an infill development within an Industrial designated General Plan area zoned IG by the city. The project would not physically divide an EJ community. Staff found no conflicts with applicable city of Stanton land use plans, policies, or regulations specific to an EJ population. The project's land use impacts on an EJ population would be less than significant and would not be disproportionate.

CONFORMANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

In accordance with Public Resources Code, section 25525, staff evaluated if the project would be in conformance with applicable LORS; in this case, LORS pertaining to land use and planning see **Land Use Table 3**.

Land Use Table 3
Project Conformance with Applicable Land Use LORS

LORS	Description	Basis for Conformance
Local		
City of Stanton General Plan **Chapter 2: Community Development** Resolution No. 2008-36 adopted September 23, 2008	The Community Development chapter (element) describes the type of appropriate land uses including development intensity and density throughout the city, encourages investment to improve and maintain the quality of existing neighborhoods and business districts in the city, and establishes goals and policies to promote appropriate development and redevelopment within the city. The General Plan Land Use Diagram illustrates the land use concept. It shows the pattern and extent of future land uses and highlights four mixed-use districts as the focus of specific opportunities for future enhancement. The General Plan Land Use Diagram should be used as general guide for the identification of the location of various land uses in the city. The map should be used in combination with the written goals and policies in the Community Development Element. "The Industrial designation is intended to provide for a variety of industrial and office uses. Uses include manufacturing, processing, research and development, product assembly, storage, warehousing and distribution, and industrial services.	Conforms The project site is designated Industrial as shown on the city's General Plan Land Use Diagram. The four-acre site is surrounded by commercial and light industrial uses. Presently the eastern portion of the project site is undeveloped. The western portion of the project site has a couple of single story wood structures, truck parking, and wooden pallet storage. City correspondence filed states, "The City of Stanton has been working closely with Stanton Energy Reliability Center, LLC (SERC LLC) regarding the development of the Stanton Energy Reliability Center (Stanton) to be located within the City of Stanton at 10711 Dale Avenue. The City of Stanton agrees that the use of the site for the Stanton project is consistent with our zoning ordinance and General Plan designations." (COS 2016a) (see **Land Use Appendix 1**) The facility would not be open to the public. It would be unstaffed and operated remotely. A "floor area ratio" (FAR) affects volume, shape, and spacing of buildings on the land. The FAR[7] for the proposed project is conservatively estimated to be 0.7 which is less than the 1.0 maximum set forth in the General Plan policy.

[7] "In practice, this ratio is constant for a zone. A floor area ratio of 1.0 means that floor area may equal lot area. FAR 5.0 means that the floor area may be up to five times as large as the lot area; and FAR 0.5 that it may be no more than half the lot area." (American Planning Association, "Floor Area Ratio," <https://www.planning.org/pas/reports/report111.htm>).

LORS	Description	Basis for Conformance
	Development in the designation is intended to: Provide a high-quality, safe and healthy working environment for employees; • Retain a high-quality, campus like feel throughout; and • Minimize conflict between the industrial uses in the designation and adjacent land uses, especially residential and open space/recreation designations. Development within this designation should be contained on large or multiple parcel areas that should retain a similar look and feel between them. Floor area ratios (FAR) for development are limited to a maximum of 1.0 though increases are available for situations where there is a special need." (COS 2008, pp. 2-5–2-6)	
City of Stanton Municipal Code Title 20 **Chapter 20.220 Industrial Zone**	Section 20.220.020 Industrial Zone Land Uses and Permit Requirements Synopsis from Section 20.220.020 • Table 2-7 Allowed Uses and Permit Requirements; Conditional Use Permit; - Utility Service Facilities • Table 2-8 Development Standards; - Industrial Zones Height Requirement; 32 feet – primary structure and accessory structure	<u>Conforms</u> The project site is in the IG zone as shown on the city Zoning Map. The proposed use would be allowed in the zone pending the granting (approval) of a conditional use permit (CUP) for a utility service facility. The project also would require approval of a variance to allow structures to exceed the 32-foot height requirement of the IG zone. City correspondence states, "Our Zoning Ordinance would require a height variance for two minor equipment components, the gas turbine sound and aesthetic enclosures, and the SERC [Stanton project] main exhaust stacks. With the architectural cladding of the stacks, we support the California Energy Commission (CEC) approval of the height variance should the CEC issue a License to the SERC [Stanton project]." (COS 2016a) The city of Stanton CUP and variance procedures are subsumed in the Energy Commission certification process because of the Commission's exclusive permitting authority over thermal power projects. The city of Stanton CUP findings from section 20.550.060, and variance findings from

LORS	Description	Basis for Conformance
		section 20.555.050 of the Zoning Code are discussed below.
	Section 20.550.060 - Conditional Use Permit Findings and Decision	
	Required findings. The review authority may approve a Conditional Use Permit or Minor Use Permit only if it first makes all of the following findings: 1. The proposed use is consistent with the General Plan and any applicable specific plan; 2. The proposed use is allowed within the applicable zone and complies with all other applicable provisions of this Zoning Code and the Municipal Code; 3. The design, location, size, and operating characteristics of the proposed activity will be compatible with the existing and future land uses in the vicinity; 4. The site is physically suitable in terms of: a. Its design, location, shape, size, and operating characteristics of the proposed use; b. The provision of public and emergency vehicle (e.g., fire and medical) access; c. Public protection services (e.g., fire protection, police protection, etc.); d. The provision of utilities (e.g., potable water, schools, solid waste collection and disposal, storm drainage, wastewater collection, treatment, and disposal, etc.); and e. Served by highways and streets adequate in width and improvement to carry the kind and quantity of traffic the proposed use would likely	Conforms A main purpose of the Energy Commission power facility and site certification process is to ensure that projects provide electrical energy in a manner consistent with public health and safety, promotion of the general welfare, and protection of environmental quality. Staff performs independent evaluations of the proposed project and proposes conditions of certification on it if necessary. Conditions of certification are written stipulations either mitigating a potential significant effect on the environment as required by the CEQA Guidelines, or to achieve conformance with applicable LORS. Staff assigned to the **Land Use** section concludes the following. The General Plan Land Use Diagram shows the proposed project site designated Industrial. “The Industrial designation is intended to provide for a variety of industrial and office uses. Uses include manufacturing, processing, research and development, product assembly, storage, warehousing and distribution, and industrial services. . .” (COS 2008, pp. 2-5–2-6) The four–acre project site is in the IG zone. The proposed use in this zone is allowed pending approval of a CUP for a utility service facility. Land adjoining the project site to the north serves as a high-voltage transmission line corridor. The transmission lines enter the 35-acre Barre Substation to the east. To the south is a railroad track and self-storage facility. The city of Stanton Corporate Yard is to the west. There are no schools, parks, or recreational areas adjacent to the project site. The project would be located on the west side of Dale Avenue between West Cerritos and Katella Avenues. Dale Avenue is a north-south four-lane divided road with a continuous left-turn lane. It is a secondary corridor. A right-of-way apron on Dale Avenue serves the project site. Emergency service vehicles would have access to the Stanton project site from Dale Avenue and Pacific Street (a secondary access).

LORS	Description	Basis for Conformance
	generate. 5. The site's suitability ensures that the type, density, and intensity of use being proposed will not adversely affect the public convenience, health, interest, safety, or general welfare, constitute a nuisance, or be materially detrimental to the improvements, persons, property, or uses in the vicinity and zone in which the property is located; and 6. The applicant agrees in writing to comply with any and all of the conditions imposed by the review authority in the approval of the Conditional Use Permit or Minor Use Permit. (Ord. 1017, 2013)	State Route 39 (Beach Boulevard), an eight-lane divided roadway with a raised median, is a half-mile away. Beach Boulevard is a primary corridor. It provides local access to residential, commercial, retail, and industrial centers. If licensed, the project owner would be required to provide a traffic control/management plan to address movement of workers, vehicles, and materials including arrival and departure schedules. Refer to the **Traffic and Transportation** section in this staff assessment. The project owner would be required to provide a fire protection and prevention program to Energy Commission staff and the Orange County Fire Authority prior to the construction and operation of the project, so they can confirm the adequacy of proposed fire protection measures. Refer to the **Worker Safety and Fire Protection** section in this staff assessment. The **Hazardous Materials Management** section of the staff assessment requires a construction site security plan, and an operation security plan that includes a protocol for contacting law enforcement and Energy Commission staff in the event of suspicious activity or emergency, and response times for hazardous material incidents. The **Soil and Water** section states the proposed project would use potable water supplied by Golden State Water Company via a connection adjacent to the project site within Dale Avenue. In addition, wastewater from the project would be discharged to the city of Stanton's sanitary sewer system, whose flow is ultimately received and treated by Orange County Sanitation District. Since the Stanton faciltiy would not have any employees onsite for project operation, there would be no sanitary wastewater generated by the project. Wastewater generated during operation would include 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. Soil and Water staff has written conditions of certification to address this matter and others.

LORS	Description	Basis for Conformance
	Section 20.555.050 - Variance Findings and Decision	
	Required findings. The applicable review authority may approve a Variance or Minor Variance application, with or without conditions, subject to all of the following findings: 1. General findings. The review authority may approve a Variance or Minor Variance application only after first making all of the following findings in compliance with Government Code Section 65906: a. There are special circumstances or conditions applicable to the subject property (e.g., location, shape, size, surroundings, topography, or other physical features, etc.) that do not apply generally to other properties in the vicinity under an identical zoning classification; b. Strict compliance with Zoning Code requirements would deprive the subject property of privileges enjoyed by other property in the vicinity and under an identical zoning classification; c. Approving the Variance or Minor Variance would not constitute a grant of special privilege inconsistent with the limitations on other properties in the same vicinity and zone in which the subject property is situated; and d. The requested Variance or Minor Variance would not allow a use or activity that is not otherwise expressly authorized by the regulations governing the subject parcel. (Ord. 1017, 2013)	Conforms A variance to exceed the height requirement of the IG zone would be required for several project structures. The height requirement of the IG zone is 32 feet for primary and accessory structures. Stanton facility components that exceed the height requirement of the zone include the following: • flu gas stacks (2) – 70-feet tall; • gas turbine VBV duct – 43-feet tall; • gas turbine facility enclosure (2) – 35-feet tall; and • steel disconnect pole – 50-feet tall. The variance is subsumed in the Energy Commission certification process because of the Energy Commission's exclusive permitting authority over thermal power projects. A special condition(s) applicable to the subject property due to its location exists that does not apply to other properties in the vicinity in the IG zone. The project site to the north adjoins a high-voltage transmission line corridor. Two steel lattice dead-end towers standing about 185-feet tall are within this portion of the corridor. This segment of the transmission line corridor is within the IG zone. The high voltage lines feed into the Barre Substation across the street from the project site. The 38.5-acre substation, constructed 1939-41 (Bishop 1939-41), has a feeder bay, transformer structure, racks, and transmission towers that exceed 100-feet tall. Also on the substation site is the Barre Peaker. It began commercial operation in 2007. It has an 80-foot tall flue gas stack. The 66kV transmission tap line serving the peaker stands approximately 90-feet tall (see **Land Use Figure 3**). The Barre Substation is in the IG zone. Approving the variance would not constitute a grant of special privilege inconsistent with the limitation on other properties in the same vicinity and zone as the subject property. The city of Stanton supports approval of the height variance with the proposed architectural cladding of the stacks (see **Land Use Appendix 1**).

NOTEWORTHY PUBLIC BENEFITS

The Stanton project represents a land use consistent with the city's industrial designation and zoning that offers a new economic opportunity for the city.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

Staff received no comments from the public, interveners, agencies, applicant, or the Committee in the area of Land Use.

CONCLUSIONS

Based on the above analysis, staff concludes the following:

- The Stanton project would not convert farmland to a non-agricultural use.
- The Stanton project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.
- The Stanton project would not conflict with existing zoning for, or cause rezoning of forest land, timberland, or timberland zoned Timberland Production.
- The Stanton project would not result in the loss of forest land, or conversion of forest land to non-forest use.
- The Stanton project would not involve other changes in the existing environment that 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 Stanton project would not physically divide an established community.
- The Stanton project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.
- The Stanton project would not conflict with any habitat conservation plan or natural community conservation plan.
- The incremental effect of the Stanton project would not create a cumulatively considerable impact under CEQA Guidelines Appendix G Agriculture and Forestry Resources or Land Use and Planning.
- The Stanton project would not create a substantial adverse impact to an EJ population, and impacts on the EJ population would not be disproportionate.
- The Stanton project would be in conformance with identified land use and planning LORS with the approval of the city's findings for issuance of a conditional use permit and variance by the Energy Commission. The findings to support the issuance of a conditional use permit and variance under the Stanton zoning code could be made.

PROPOSED CONDITIONS OF CERTIFICATION

Staff has not proposed any conditions of certification under the Land Use section.

REFERENCES

American Planning Association, "Floor Area Ratio," <https://www.planning.org/pas/reports/report111.htm> accessed on December 28, 2017.

California Code of Regulations, title 14, division 6, chapter 3, section 15000 et seq. and Appendices A-N.

California Government Code, section 65000, and the following.

Bishop 1939-41 – Bishop, G. Haven, "Barre Substation construction," Southern California Edison Photographs and Negatives, The Huntington Library, Art Collections, and Botanical Gardens. Photo Archives, 1939-41, <http://hdl.huntington.org/cdm/singleitem/collection/p16003coll2/id/34179/rec/8>, accessed on June 15, 2017.

COS 2008 – City of Stanton General Plan, September 23, 2008, <http://ci.stanton.ca.us/Portals/0/Documents/Departments/community%20development/planning/Applications/City%20of%20Stanton%20Adopted%20General%20Plan.pdf?ver=2017-04-06-155149-587&timestamp=1512170231234>, accessed December 7, 2017.

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Stanton

October 25, 2016

John Heiser, AICP
Siting – Project Manager
California Energy Commission
1516 Ninth Street, MS 15
Sacramento, CA 95814

Subject: **Stanton Energy Reliability Center**
City of Stanton Review

Dear Mr. Heiser,

The City of Stanton has been working closely with Stanton Energy Reliability Center, LLC (SERC LLC) regarding the development of the Stanton Energy Reliability Center (SERC) to be located within the City of Stanton at 10711 Dale Avenue. The City of Stanton agrees that the use of the site for the SERC is consistent with our zoning ordinance and General Plan designations.

The City of Stanton has provided input to SERC LLC relating to the conceptual and aesthetic designs of the facility including the overall landscaping plan for the SERC. While we understand that the SERC facility design is preliminary at this time, we support the aesthetic concepts for the treatment of the enclosures, the architectural cladding of the stacks, and the general layout of the facility.

Our Zoning Ordinance would require a height variance for two minor equipment components, the gas turbine sound and aesthetic enclosures, and SERC's main exhaust stacks. With the architectural cladding of the stacks, we support the California Energy Commission (CEC) approval of the height variance should the CEC issue a License to the SERC.

The City of Stanton believes that the preliminary landscape plan conforms to the intent of the City's landscape policies incorporating a combination of screening and Dale Avenue and Pacific Street frontages landscaping on the site. In addition, The City of Stanton has

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agreed to allow SERC to fund the planting of additional trees in Stanton's Central Park, and to fund additional landscaping in the public right-of-way. We believe that this combination of landscaping at the site and the funding of offsite landscaping improvements is the best combination to meet the intent of the City's landscape ordinance and policies and therefore we are satisfied that SERC will comply with our landscaping requirements.

The City of Stanton and SERC have executed a Cooperation Agreement and over the last few years have developed a good working relationship. The City looks forward to hosting the California Energy Commission (CEC) at future proceedings in SERC's Application For Certification (AFC) process.

Should you have any questions, please contact Community Development Director Kelly Hart at (714) 890-4213 or khart@ci.stanton.ca.us.

Sincerely,

James A. Box
City Manager

LAND USE- FIGURE 1

Stanton Energy Reliability Center - View of Project Site from Dale Avenue

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Google Earth

LAND USE- FIGURE 2

Stanton Energy Reliability Center - Aerial view of Project Site and vicinity

LAND USE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Google Earth - CEC Staff

LAND USE- FIGURE 3

Stanton Energy Reliability Center - View of Barre Substation and Barre Peaker from Dale Avenue

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Google Earth

NOISE AND VIBRATION

Testimony of Christopher Dennis and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

If built and operated in conformance with the proposed **Noise and Vibration** conditions of certification, Stanton Energy Reliability Center (Stanton or project) 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 Stanton. 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

The Stanton project would operate as a simple-cycle power plant with onsite battery energy storage and synchronous condenser capability. The batteries would operate during the ramping of the gas turbines from cold condition to full load, providing instantaneous and continuous response to the electricity grid. Use of the battery system would be limited to daytime. The system is not expected to operate during the nighttime (SERC 2017b).

Stanton would be located on two parcels (Parcel 1 and Parcel 2) totaling about 4-acres in an industrial zoned area (SERC 2016a). The two parcels are bisected by the Stanton Stormwater Channel. Adjacent to the project site to the south is an active Union Pacific railroad running east-west. A modular home community is located approximately 100 feet southeast of Parcel 1, and a single-family home community is located approximately 65 feet northwest of Parcel 2 (see **Noise Figure 1**).

Sound monitoring locations (LT1 and LT2) were set up for the nearest residences described above. LT1 was set up next to the modular home community, southeast of Parcel 1. LT2 was set up next to the single-family homes, northwest of Parcel 2 (see **Noise Figure 1**).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Noise Table 1 below identifies the noise and vibration LORS related to Stanton.

Noise Table 1
Laws, Ordinances, Regulations, and Standards

	Applicable LORS	Description	Project Consistency
Federal	Occupational Safety & Health Act (OSHA), Title 29, Code of Federal Regulations, § 1910.95; Title 8, California Code of Regulations, Sections 5095-5099	Protect workers from the effects of occupational noise exposure.	Conditions of Certification **NOISE-3** (employee noise control program), **NOISE-5** (occupational noise survey), and **NOISE-7** (sheet-pile driving/vibration mitigation)
	U.S. Environmental Protection Agency Guidelines	Assists state and local government entities in development of state and local LORS for noise.	
	Federal Transit Administration	Establishes thresholds for ground-borne vibration associated with construction of rail projects; also applied to other types of projects.	
State	California Government Code, § 65302(f)	Encourages each local governmental entity to perform noise studies and implement a noise element as part of its general plan.	Conditions of Certification **NOISE-3** (employee noise control program), **NOISE-4** (noise restriction consistent with local LORS), and **NOISE-5** (occupational noise survey)
	State of California, Office of Noise Control, Model Community Noise Control Ordinance	Provides guidance for acceptable noise levels in the absence of local noise standards.	
	California Occupational Safety & Health Act (Cal-OSHA): Title 8, California Code of Regulations, §§ 5095-5099 (Article 105)	Protects workers from the effects of occupational noise exposure.	
	California Department of Transportation (Caltrans), Transportation and Construction Vibration Guidance Manual	Establishes guidelines for assessing the impacts of ground-borne vibration associated with pile driving.	

Applicable LORS		Description	Project Consistency
Local	City of Stanton Municipal Code Section 9.28 City of Anaheim Municipal Code Section 6.70.010 City of Buena Park Municipal Code Section 8.28.010	The Municipal Code limits hours of construction and includes quantitative limits on allowable noise for various receptor land uses.	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

City of Stanton LORS

Project construction and operational noise within the city of Stanton is regulated by Stanton Municipal Code § 9.28.

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 exempted from the city of Stanton municipal noise restrictions. However, noise sources associated with construction are not allowed between the hours of 8 p.m. and 7 a.m. on weekdays and Saturdays, and at any time on Sundays and federal holidays. These restrictions, therefore, allow construction-related noise in the city of Stanton only between the hours 7 a.m. to 8 p.m., Monday through Saturday.

Operation

Noise-sensitive land uses are typically dwellings, schools, hospitals, nursing homes, churches, and libraries. The city noise level performance standards from non-transportation noise sources are set for residential properties only (Stanton Municipal Code § 9.28, Noise Zone 1). They specify 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 locations LT1 and LT2. The performance standard is set at 55 dBA L_{eq} during the daytime (7 a.m. to 10 p.m.) and 50 dBA L_{eq} during the nighttime (10 p.m. to 7 a.m.).

City of Anaheim LORS

The city of Anaheim municipal code limits construction or building repair of any premises within the city to between the hours of 7 a.m. and 7 p.m. if the activity takes place within a 500-foot radius of a residential area. This applies to the project's linear facilities.

City of Buena Park LORS

The city of Buena Park has adopted the Orange County noise ordinance sections 4-6-1 through 4-6-16. These sections apply to all residential property within the county, and therefore also within the city of Buena Park. These ordinances limit construction activities to between the hours of 7 a.m. and 8 p.m. on weekdays and Saturday. This applies to project linear facilities.

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:

- resulting noise level and character of the noise;

- time the noise is produced (day or night) and duration and frequency of occurrence of the noise; and
- 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 construction activity is temporary and 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 represented by monitoring locations LT1 and LT2, 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 an ambient noise survey on August 4 and 5, 2015 and then again on August 23 and 24, 2016 (SERC 2016a, 2016a).The noise survey was performed using appropriately calibrated sound-recording equipment and industry-accepted standards and techniques. The noise survey monitored existing noise levels at the locations identified in **Noise Table 2** below and **Noise Figure 1**.

Construction Impacts and Mitigation

Construction noise is normally temporary in duration. Construction of the Stanton project would last approximately 12 months (SERC 2016a, § 2.1.16). 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 the loudest construction activities average about 89 dBA L_{eq} at 50 feet from the noise source (SERC 2016a, Table 5.7.8). Using this average, construction noise level would be about 71 dBA L_{eq} at monitoring location LT1 and 73 dBA L_{eq} at LT2.

Noise Table 2
Ambient Noise Survey Summary[1]

Monitoring Location (Receptor)	Description	Date of Noise Survey[2]	Distance to Noise Source (feet)	Hourly L_{eq} dBA Daytime (7 am to 10 pm)	Hourly Leq dBA Nighttime (10 pm to 7 am)	Hourly L_{90} dBA Nighttime (Quietest 4-hrs)[3]
LT1	Roadway traffic from Dale Avenue; railroad use	August 4 to 5 (2015)	400	67.2	60.1	44.2
		August 26 to 24 (2016)		69.5	62.8	40.8
LT2	Nearby industrial facilities; railroad use	August 4 to 5 (2015)	300	57.9	49.1	36.3
		August 26 to 24 (2016)		59.2	51.9	37.5

Notes:
1. Base averages from SERC 2016a, Tables 5.7-4 through 5.7-7, and SERC 2017b Table 5.5-7 revised.
2. The August 4 to 5, 2015 noise survey was 23 hours long, not a 25-hour period, missing the 12:00 pm and 1:00 pm hours.
3. Lowest consecutive 4 hours, L90.

LORS Compliance

Project construction activities could occur during the daytime, 7 a.m. to 8 p.m., Monday through Saturday only in accordance with Stanton Municipal Code § 9.28. No construction would occur on a Sunday or federal holiday in compliance with Stanton Municipal Code § 9.28. To ensure that those requirements are met, staff recommends Condition of Certification **NOISE-6** to restrict noisy activities to daytime hours only, 7 a.m. to 8 p.m., Monday through Saturday.

CEQA Impacts

Construction noise levels at LT1 and LT2 when combined with ambient noise levels at these locations are presented below in **Noise Table 3**.

Noise Table 3
Cumulative Construction Noise at Monitoring Locations LT1 and LT2

Monitoring Location (Receptor)	Ambient Noise (dBA hourly L_{eq})[1]	Construction Noise (dBA hourly L_{eq})	Cumulative Ambient and Construction Noise (dBA hourly L_{eq})
LT1	68	71	73
LT2	59	73	73

[1] Existing baselines are averaged from the two dates shown in **Noise Table 2**

The construction noise level of 71 dBA L_{eq} at monitoring location LT1 combined with the existing average daytime ambient of 68 dBA L_{eq} at this location, results in 73 dBA hourly

L_{eq} (see **Noise Table 3**). The average construction noise level would be 5 dBA above ambient noise at LT1.

At LT2, the construction noise level of 73 dBA L_{eq} at monitoring location LT2 combined with the existing average daytime ambient of 59 dBA L_{eq} at this location, results in 73 dBA hourly L_{eq} (see **Noise Table 3**). The average construction noise level would be 14 dBA above ambient noise at LT2.

As discussed above, a noise level increase of more than 5 dBA can be significant depending on the particular circumstances of the project, such as the time the noise is produced (day or night). For construction, noise is usually considered to be less than significant in terms of CEQA compliance if construction activity is temporary and use of heavy equipment and activities causing high levels of noise are limited to daytime hours. Stanton project construction would be temporary (12 months) and limited to daytime hours, reducing the potential for noise impacts. Additionally, the above predicted noise levels are based on data collected from construction equipment of the 1970s era and are considered conservative because in recent years, construction equipment has been designed and built to be quieter to reduce operators' exposure to high noise levels.

To ensure construction noise does not significantly impact human receptors at LT1 and LT2, 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.

Linear Facilities

The applicant proposes to install a gen-tie line to connect the project to the nearby Barre Substation within the city of Stanton and a new natural gas pipeline that would extend north within the cities of Stanton, Anaheim, and Buena Park (SERC 2016a, §§ 2.1.15, 2.2.2.3; SERC 2018i). Water supply for the project would be supplied via existing water supply pipelines (SERC 2016a, § 5.15.1.5.1). Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than two or three days. To minimize any potential impacts to noise-sensitive receptors, Condition of Certification **NOISE-6** limits construction of linear facilities to daytime hours. **NOISE-6** limits construction hours for each segment of the linear facilities to its respective city's hourly limits. Therefore, installation of the linear facilities would not result in a significant impact.

Pile Driving

Depending on the type of equipment foundation, final locations, and depths of underground facilities, to be determined in the project's final engineering design, sheet-piles may be required along the southern boundary of the property to protect the railroad embankment during construction activities (SERC 2018j). Installation of these piles may require the use of an impact pile driver. Impact pile driving using traditional techniques could be expected to reach 101 dBA at a distance of 50 feet. Based on this,

the range of pile driving noise at monitoring location LT1 and LT2 would be approximately 83 dBA and 85 dBA, respectively. These levels exceed the ambient level at LT1 by 15 dBA and at LT2 by 26 dBA (see **Noise Table 3**, 2nd column [daytime ambient L_{eq}]). Therefore, pile driving using traditional techniques can potentially cause a significant noise impact at these noise-sensitive receptors. 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 or hydraulic pile pushers instead of impact drivers. These methods can be effective in reducing the noise by 8 dBA to15 dBA as compared to un-silenced 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**. 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. As stated above, pile driving may be a construction element of this project. 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. As a measure of caution, **NOISE-7** would require public notification of the work and would ensure that pile driving is conducted in a manner to reduce the potential for any 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**) (SERC 2016a § 5.7.3.2.3). 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 Stanton project would include the gas turbine air inlet, gas turbine generator, selective catalytic reduction (SCR) module, exhaust-air stack, gas compressor, electric transformer, cooling fans, and some pumps, piping, and valves. Operation of the battery energy system, which would be placed in an enclosed building, and the synchronous condenser, would not increase operational noise generated by the project (SERC 2017b).

The batteries would draw electricity directly from the electricity grid in times of over-generation, when most Stanton noise-producing equipment, the simple-cycle units, are not in operation (SERC 2017b). In this mode, noise attributable to operation of the project from operation of the batteries would be at least 5 dBA lower at monitoring locations LT1 and LT2 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. In this mode, noise attributable to project operation would be at least 5 dBA lower at monitoring locations LT1 and LT2 than with the turbines in operation.

To reduce noise generated by operation of Stanton, 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;
- gas compressor noise enclosure;
- silencers, barriers, lagging, and partial or full enclosures for auxiliary equipment and piping;
- low-noise fans, motors, and valves; 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 (SERC 2016a, § 5.7.3.3). This is an acceptable industry standard. The project's loudest operational noise level at monitoring locations LT1 and LT2, based on the model (SERC 2016a, § 5.7.3.3.3), are tabulated in **Noise Table 4** below and compared to the city limits.

Noise Table 4
LORS Limits and Predicted Operational Noise Level at LT1 and LT2

Monitoring Location (Receptor)	Description	Daytime Hourly L_{eq} (dBA)	Nighttime Hourly L_{eq} (dBA)
		7 am to 10 pm	10 pm to 7 am
LT1	City of Stanton Limit (L_{eq})	55	50
	Stanton project Operational Noise	49	49
	Compliance with LORS?	Yes	Yes
LT2	City of Stanton Limit (L_{eq})	55	50
	Stanton project Operational Noise	43	43
	Compliance with LORS?	Yes	Yes

As shown in **Noise Table 4**, operational noise at LT1 and LT2 would comply with the city of Stanton noise LORS. To ensure that the project operation would not exceed the city LORS noise criteria, staff recommends Condition of Certification **NOISE-4**. **NOISE-4** would require an operational noise survey to ensure project compliance with the noise limits. Staff also recommends Conditions of Certification **NOISE-1** and **NOISE-2** to 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, then feasible mitigation must be applied to the project to either reduce or remove that impact.

Stanton is expected to operate as an intermediate load and peaking facility, operated primarily in the daytime and evening (7 a.m. to 10 p.m.). It is expected to rarely operate at night (10 p.m. to 7 a.m.) when nearby residents 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)	Operational Noise Level (dBA)	Nighttime Ambient L_{90} (dBA)[2]	Combined, Ambient Plus Project (dBA)	Change (dBA)
LT1	49	43	50	+7
LT2	43	37	44	+7

[2] Existing baselines are averaged from the two dates shown in **Noise Table 2**

As shown in **Noise Table 5**, operational noise would result in a 7 dBA increase at both receptor locations, LT1 and LT2. This increase would be potentially significant. However, as explained above, nighttime project operation may occur only infrequently when there is a need for critical electrical reliability support (SERC 2017b, § 5.7). Even when this need arises, full operation of the project at night, resulting in noise levels as high as 49 dBA at LT1 and 43 dBA at LT2 would be very rare. Thus, the above increase in the nighttime ambient levels due to 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 with the above operational noise levels.

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 they 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 (SERC 2016a, § 5.7.3.3.4). To ensure that tonal noises do not cause public nuisance, staff proposes Condition of Certification **NOISE-4**, which would require mitigation measures, if necessary, to ensure the project would not create tonal noises.

Linear Facilities

The applicant proposes to install a natural gas pipeline and gen-tie line (SERC 2016a, §§ 2.1.7, 2.1.9, 2.1.10.1, 2.1.15). Water supply for the project would be supplied via existing water supply pipelines. The natural gas pipeline would be 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. The Stanton project's gen-tie line would be only 66 kV and would extend underground to the nearby Barre Substation (SERC 2016a, § 2.1.6), and thus, it would be silent. For more discussion, see **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). Project operating components 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 project, have not resulted in vibration impacts. Ground-borne vibration from the Stanton 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 project's chief source of airborne vibration would be gas turbine exhaust air. In a power plant such as Stanton, 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**) (SERC 2016a, §§ 5.7.3.3 and 5.7.6). To ensure that plant operating and maintenance workers are adequately protected in accordance with these LORS, staff proposes Condition of Certification **NOISE-5**. This condition would require the project owner to undertake an occupational noise survey to determine which areas of the facility, if any, constitute a hazardous noise area. If any such areas are found, the project owner would be required to implement measures to mitigate employee exposure to such noise levels, including those discussed below.

In accordance with these LORS, signs would be posted in areas of the plant with noise levels exceeding 85 dBA (OSHA recognizes levels above 85 dBA as a threat to workers' hearing), and hearing protection would be required and provided. Employees would be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided by the project owner.

Other requirements in these LORS include, but are not limited to, instituting a training program for all employees who would be exposed to excessive noise, ensuring employee participation in such program. The training program would be repeated annually for each of those employees. Information provided in this program would be updated to be consistent with changes in protective equipment and work processes.

These protective measures are feasible and are consistent with standard practices of the power plant industry. They have proven to be sufficiently effective in protecting workers from noise hazards.

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. The Stanton project 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 the project site, there are five proposed projects as shown below in **Noise Table 6.**

Noise Table 6
Proposed Projects within a One-Mile Radius of the SERC Site

ID	Project Title	Project Description	Location	Distance To Project (Miles)	Status
1	PPD774	Construction of a four unit condominium project.	7921 Second St., Stanton	0.58	Building Plan Check
2	PPD783	Construction of two new commercial office buildings.	10441/10425 Magnolia, Stanton	0.74	Still in entitlement process
3	PPD777	Construct a commercial development including a retail pad building, drive-through restaurant, gas station and a drive through car wash.	11382, 11430 and 11462 Beach Blvd., Stanton	0.76	Building Plan Check
4	Relocation and construction of school district central kitchen facility	Relocate District's central kitchen facility from the District Office, located at 501 North Crescent Way, Anaheim, to 2735 West Ball Road, Anaheim.	2735 West Ball Road, Anaheim.	0.79	Unknown
5	Ball Road Townhomes	Subdivide and construct a 43-unit single-family attached residential project	2730 W Ball Rd., Anaheim	0.81	Under Review

The cities of Stanton and Anaheim municipal codes would restrict construction to daytime hours and limit the noise these projects could generate. Condition of Certification **NOISE-4** would ensure that the Stanton project'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 Stanton, combined with mitigation measures that would be required by each city's LORS for the above projects, would result in no additional combined noise in the area. For these reasons, Stanton would not cause a significant cumulative noise impact.

ENVIRONMENTAL JUSTICE

As discussed in the **Environmental Justice** section of this staff assessment, the minority populations in the six-mile radius around the proposed project constitutes an environmental justice (EJ) population based on race and ethnicity (**Environmental Justice Figure 1**). **Environmental Justice Figure 2** and **Table 3** show there is an EJ population based on low income. Staff reviewed **Environmental Justice Figures 1** and **2** and **Table 3** in the **Environmental Justice** section to examine whether the construction and operation of Stanton 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.

Restrictions on construction activities, described in Conditions of Certification **NOISE-6** and **NOISE-7** and other noise conditions of certification in this staff assessment, would reduce the noise impact to the minority population and ensure that impacts to the EJ population would not be disproportionate.

FACILITY CLOSURE

All operational noise from the project would cease when Stanton 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.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments on **Noise and Vibration** were received. The applicant proposed the following modifications to PSA Conditions of Certification **NOISE-4**, **NOISE-5**, and **NOISE-7** (SERC 2018i; SERC 2018j):

- **NOISE-4** was modified to clarify that the 25-hour community noise survey would take place after commissioning and installation of the noise attenuation measures. **NOISE-4** was also modified to allow monitoring to be conducted at an alternate location instead of locations LT1 and LT2, if necessary, as approved by the CPM.
- **NOISE-5** was modified to clarify that the occupational noise survey would take place after commissioning and installation of the noise attenuation measures.
- **NOISE-7** was modified to specify that pile driving would be impact sheet-pile driving.

Staff recommends adopting these proposed changes. Conditions of certification have been revised accordingly.

The applicant also eliminated the southern natural gas pipeline alternative from further consideration, which would have passed through the city of Garden Grove (SERC 2018i). Thus, staff has eliminated this city's construction-related requirement in **NOISE-6**. The remaining route (proposed northern route) would not pass through Garden Grove.

CONCLUSIONS

If built and operated in conformance with the following conditions of certification, the Stanton project 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**. With the inclusion of these conditions of certification, there would be no disproportionate impacts to the EJ population.

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, 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[1]. The project owner or its authorized agent shall:

- use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to the noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant that 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.

[1] A project-related noise complaint is a complaint about noise that is caused by the Stanton project as opposed to another source, is documented by an individual or entity affected by such noise, and which may or may not constitute a violation by the project of any noise condition of certification.

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 monitoring location LT1 and 43 dBA measured at monitoring location LT2.

No new pure-tone components, as defined below, 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.

Definition of a pure-tone component: A pure tone is defined 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.

After commissioning and installation of the noise attenuation measures and when the project first achieves a sustained output of 85 percent or greater of its rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring locations LT1 and LT2 or at an alternative 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 purpose of demonstrating compliance with this condition of certification may alternatively be made at a location other than LT1 and LT2, acceptable to the CPM, and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

If the results from the noise survey indicate that the power plant noise exceeds the above values at the above monitoring locations, 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 does not exceed the pure tone requirements as defined above.

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 and after commissioning and installation of the noise attenuation measures.

Within 15 days after completing the survey, the project owner shall submit a summary report to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. When these measures are implemented and in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

OCCUPATIONAL NOISE SURVEY

NOISE-5 Following commissioning and installation of the noise attenuation measures and 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[2] work associated with the construction work relating to any project features onsite, including pile driving, shall be restricted to the times delineated below:

- Mondays through Saturday: 7:00 a.m. to 8:00 p.m.

Heavy equipment operation and noisy work associated with the construction work relating to installation of linear facilities shall be restricted to the times delineated below:

Work within the cities of Stanton and Buena Park:

- Monday through Saturday: 7:00 a.m. to 8:00 p.m.

Activities taking place within a 500-foot radius of a residential area within the city of Anaheim:

- Monday through Saturday: 7:00 a.m. to 7:00 p.m.

Construction work shall be performed in a manner to ensure excessive noise (noise that draws a project-related complaint) 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 impact sheet-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 impact sheet-pile driving prior to start of impact sheet-pile driving activities.

[2] Noise that draws a project-related complaint. For definition of a “project-related complaint”, see the footnote in Condition of Certification **NOISE-2**.

Verification: At least 15 days prior to first impact sheet-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 LT1.

At least 10 days prior to first impact sheet-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.

NOISE COMPLAINT RESOLUTION FORM

Stanton Energy Reliability 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

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC 2017b – CH2M/Applicant Consultant (TN 217461). Stanton Energy Reliability Center Application for Certification Data Request Response, Set 1 (A1-A63). Submitted to CEC/Docket Unit on May 5, 2017.

SERC 2018i – DayZen LLC/Scott A. Galati (TN 223414). Stanton Energy Reliability Center LLC's Final Comments on the Preliminary Staff Assessment, dated April 30, 2018. Submitted to CEC/Docket Unit on April 30, 2018.

SERC 2018j – DayZen LLC/Scott A. Galati (TN 223293). Stanton Energy Reliability Center LLC's Supplemental NOISE-7 Comment on Preliminary Staff Assessment, dated May 9, 2018. Submitted to CEC/Docket Unit on May 10, 2018.

U.S. Census 2014. United States Census Bureau, OnTheMap Version 6.0, 2014, <https://onthemap.ces.census.gov/>.

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 Appendix A, 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 (Leq), 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 Appendix A, Noise Table A2** has been provided to illustrate common noises and their associated sound levels, in dBA.

Noise Appendix A, 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, Leq	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 Appendix A, 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 shown in **Noise Appendix A, Noise Table A3** below.

Noise Appendix A, 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

Note: 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 are shown in **Noise Appendix A, Noise Table A4** below.

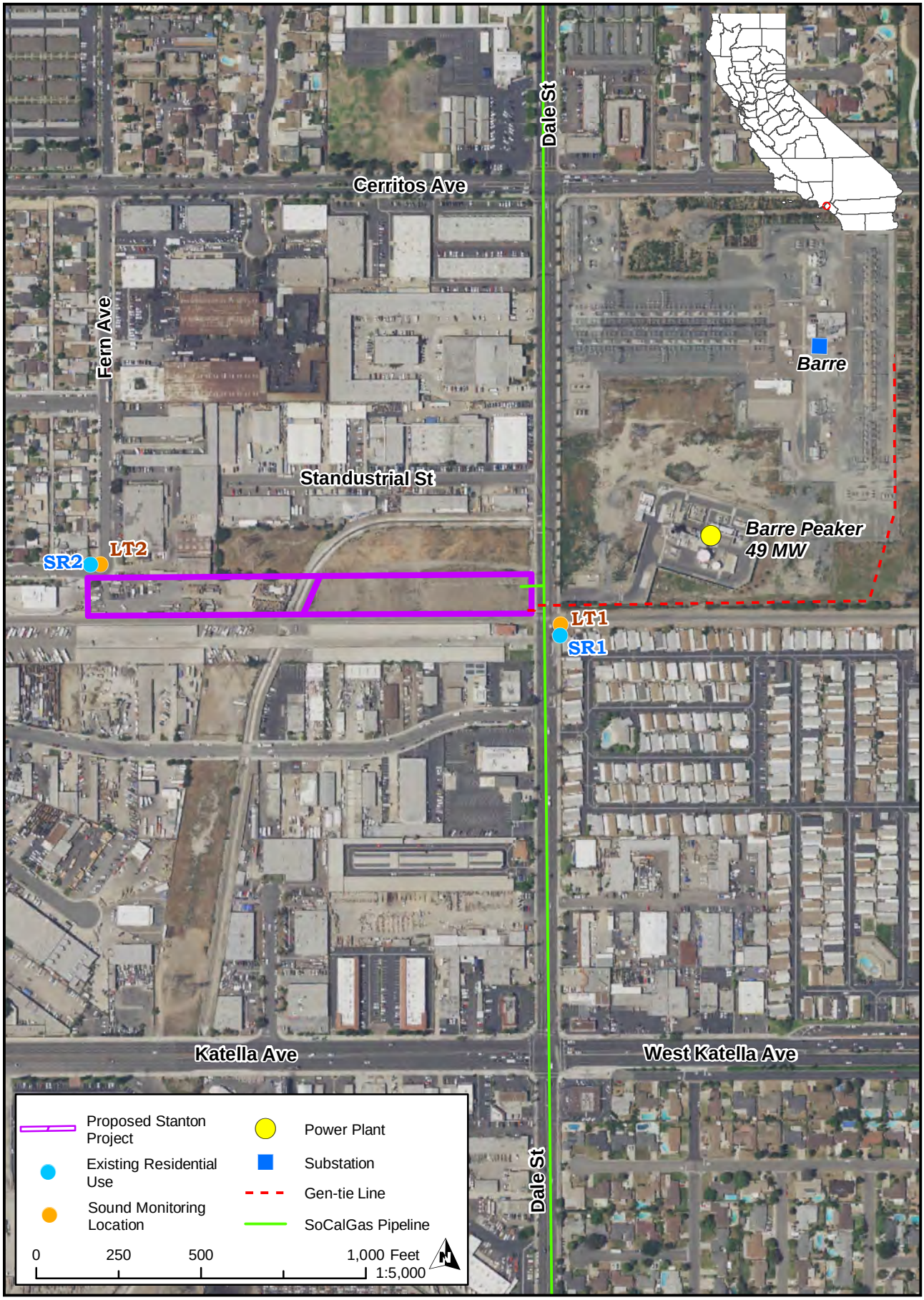
Noise Appendix A, Noise Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 C.F.R. § 1910.

NOISE AND VIBRATION - FIGURE 1

Stanton Energy Reliability Center - Sound Monitoring Locations



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M Hill Figure 5.7-1, USDA NAIP Imagery 2016, OpenStreetMap 2017

PUBLIC HEALTH

Testimony of Huei-An (Ann) Chu, Ph.D.

SUMMARY OF CONCLUSION

California Energy Commission staff has analyzed the potential human health risks associated with construction and operation of the proposed Stanton Energy Reliability Center (Stanton). Staff's analysis of potential health impacts was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population. Staff concludes that no one (including the public, off-site nonresidential workers, recreational users, and environmental justice [EJ] populations) would experience any acute or chronic cancer or non-cancer effects of health significance during construction and operation of the proposed Stanton project. Therefore, there would be no significant health impacts from the project's toxic air emissions.

INTRODUCTION

The purpose of this section of the Final Staff Assessment (FSA) is to determine if emissions of toxic air contaminants (TACs) from the proposed Stanton project would have the potential to cause significant adverse public health impacts or to violate standards for the protection of public health. If potentially significant health impacts are identified, staff would identify and recommend mitigation measures necessary to reduce such impacts to insignificant levels.

In addition to the analysis in this **Public Health** section that focuses on potential effects on the public from emissions of toxic air contaminants, Energy Commission staff addresses the potential impacts of regulated, or criteria, air pollutants in the **Air Quality** section of this FSA and assesses the health impacts on public and workers from accidental releases of hazardous materials in the **Hazardous Materials Management** and **Worker Safety & Fire Protection** sections. The health and nuisance effects from electric and magnetic fields are discussed in the **Transmission Line Safety and Nuisance** section. Pollutants released from the project's wastewater streams are discussed in the **Soil and Water Resources** section. Releases in the form of hazardous and nonhazardous wastes are described in the **Waste Management** section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Public Health Table 1 lists the federal, state, and local laws, ordinances, regulations, and standards (LORS) applicable to the control of TAC emissions and mitigation of public health impacts for Stanton. This FSA evaluates compliance with these LORS.

Public Health Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description	Stanton Consistency
Federal		
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	Section 112 of the Clean Air Act addresses emissions of hazardous air pollutants (HAPs). This act requires new sources that emit more than ten tons per year of any specified HAP or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology (MACT).	**Consistent:** The total combined formaldehyde emission from all sources is 0.152 tpy, which is less than 10 tpy. The total combined HAPs from all sources is 0.338 tpy, which is less than 25 tpy. Therefore, this subpart is not applicable because Stanton would not be a major source for HAP emissions.
40 Code of Federal Regulations (CFR) Part 63 Subpart YYYY (National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines)	This regulation applies to gas turbines located at major sources of HAP emissions. A major source is defined as a facility with emissions of ten tons per year (tpy) or more of a single HAP or 25 tpy or more of a combination of HAPs based on the potential to emit.	**Consistent:** The total combined formaldehyde emissions from all sources is 0.152 tpy, which is less than 10 tpy. The total combined HAPs from all sources is 0.338 tpy, which is less than 25 tpy. Therefore, this subpart is not applicable because Stanton would not be a major source for HAP emissions.
State		
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	These sections establish thresholds of exposure to carcinogenic substances above which Proposition 65 exposure warnings are required.	**Consistent:** Please see Significance Criteria in the text below for detailed discussion.
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.	**Consistent:** Please see discussion of Hazardous Materials Handling Program in Hazardous Material Management 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.”	**Consistent:** There would be no significant health impacts from the project’s toxic air emissions.

Applicable LORS	Description	Stanton Consistency
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.	**Consistent:** According to South Coast Air Quality Management District (SCAQMD)'s Final Determination of Compliance (FDOC), this project meets this LORS.
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.	**Consistent:** The maximum cancer risk and non-cancer hazard index (both acute and chronic) for operations emissions from Stanton estimated independently by the applicant, staff, and the SCAQMD are all below levels of significance.
Local		
South Coast Air Quality Management District (SCAQMD) Rule 1401 (New Source Review of Toxic Air Contaminants)	This rule specifies limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants (TACs).	**Consistent:** The maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) are all below levels of significance.
SCAQMD Rule 212(c)(3) (Permits – Public Notice)	This rule requires public notification for any new or modified permit unit source if the MICR, based on Rule 1401, exceeds one in 1 million (1×10^{-6}), due to a project's proposed construction, modification, or relocation for facilities with more than one permitted source unless the applicant can show the total facility-wide MICR is below 10 in 1 million (10×10^{-6}).	**Consistent:** Public notice is not required. The increases in toxic emissions from each turbine would not expose a person to a maximum individual cancer risk that is greater than or equal to one in a million.

SETTING

Characteristics of the natural environment, such as meteorology and terrain, affect the project's potential for impacts on public health. An emission plume from a facility would affect elevated areas before lower terrain areas because of reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts compared to lower-level areas. Also, the land use around a project site can influence impacts due to population distribution and density, which, in turn, can affect public exposure to project emissions. Additional factors affecting potential public health impacts include existing air quality and environmental site contamination.

FACILITY, SITE AND VICINITY DESCRIPTION

The proposed Stanton site is located at 10711 Dale Avenue in the city of Stanton. It is within the South Coast Air Quality Management District (SCAQMD). Stanton is a city in Orange County in Southern California (SERC 2017d, Section 5.9.1).

Stanton would be a natural gas-fired electric gas turbine (EGT) plant consisting of two General Electric (GE) LM6000 PC SPRINT natural gas-fired, simple-cycle combustion turbine generators (CTGs) and related facilities. It also includes integrated batteries for hybrid operation. Each of the two GE Battery Energy Storage System units would be 10 megawatts (MWs) and 4.3 megawatt-hours (MWh) (total 8.6 MWh). In total, Stanton would provide 98 MW (nominal) of Hybrid EGT capacity. There is no diesel-fueled emergency equipment proposed for the site (SERC 2016a, Section 1 and SERC 2017d, Section 5.9).

Sensitive receptors, such as infants, the aged, and people with specific illnesses or diseases, are the subpopulations which are more sensitive to the effects of toxic substance exposure. In the application for certification (AFC), a partial list of the nearest sensitive receptors is listed in Table 5.9-1 (SERC 2017d, Section 5.9.1). A more detailed list of sensitive receptors for the primary impact area is listed in Table 5.1D-7 (SERC 2016b, Appendix 5.1D). This is also the complete list of sensitive receptors analyzed in the health risk assessment (HRA) (SERC 2017d, Section 5.9.1). The nearest sensitive receptor to the project site is Robert M. Pyles Elementary School, approximately 0.32 (1690 feet) from the Stanton site (SERC 2017d, Section 5.9.1). This school is greater than 1000 ft. from the Stanton site, therefore no SCAQMD Risk notifications are required (SERC 2017b, Page 27). Residences and workers are not technically defined as "sensitive receptors" by OEHHA (SERC 2017d, Section 5.9.1).

METEOROLOGY AND CLIMATE

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into the air and the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants along with associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced and localized exposures may be increased.

Atmospheric stability is one characteristic related to turbulence, or the ability of the atmosphere to disperse pollutants from convective air movement. Mixing heights (the height marking the region within which the air is well mixed below the height) are lower during mornings because of temperature inversions. These heights increase during warm afternoons. Staff's **Air Quality** section presents a more detailed description of meteorological data for the area.

The climate of the South Coast Air Basin (SCAB) is strongly influenced by the local terrain and geography. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean on the west, and relatively high mountains forming the north, south, and east perimeters. The climate is mild, tempered by cool sea breezes and is dominated by the semi-permanent high pressure of the eastern Pacific (SERC 2016a, Section 5.1.6.1).

The annual and quarterly wind rose plots[1] (from 2006 to 2009 and 2012) for the Anaheim monitoring station, located approximately 5.0 kilometers (km) east-northeast from the project site, show that the prevailing winds at the proposed Stanton site were mostly from the southwest all year round, and partially from the northeast during October through March (SERC 2016a, Section 5.1.7, SERC 2016b, Appendix 5.1B). Please refer to the **Air Quality** section of this FSA for more details.

EXISTING PUBLIC HEALTH CONCERNS

As previously noted, the proposed Stanton site is located in Orange County, within the South Coast Air Quality Management District (SCAQMD). By examining average toxic concentration levels from representative air monitoring sites, together with cancer risk factors specific to each carcinogenic contaminant, a lifetime cancer risk can be calculated to provide a background risk level for inhalation of ambient air. This analysis is prepared to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population located within the same county or air basin of the proposed project site. Such assessment of existing health concerns provides staff with a basis to evaluate the significance of any additional health impacts from the project and assess the potential need for further mitigation.

Cancer

When examining such risk estimates, staff considers it important to note that the overall lifetime risk of developing cancer for the average male in the United States is about 1 in 2, or 500,000 in 1 million and about 1 in 3, or 333,333 in 1 million for the average female (American Cancer Society 2014).

From 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 are 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 is toward lower values compared to earlier results for the 2007 to 2011 period.

[1] A wind rose plot is a diagram that depicts the distribution of wind direction and speed at a location over a period of time.

By examining the State Cancer Profiles presented by the National Cancer Institute, staff found that the trend of cancer death rates in Orange County had been falling between 2008 and 2012. These rates (of 14.63 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 2017, the death rate due to all cancers, from 2013 to 2015, is 13.5 in 1 million for Orange County, slightly lower than the cancer death rate (14.38 in 1 million) for California (CDPH 2017, Table 2).

Lung Cancer

As 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 State Cancer Profiles are similar: Lung and Bronchus Cancer incidence rates in Orange county during 2010-2014 were 4.17 in 1 million, which is slightly lower than the incidence rate of the entire state (4.46 in 1 million) (National Cancer Institute 2016b).

According to the County Health Status Profiles 2017, the death rate due to lung cancers, from 2013 to 2015, is 2.84 in 1 million for Orange County, slightly lower than the death rate (3.06 in 1 million) for California (CDPH 2017, Table 4).

Asthma

The asthma diagnosis rates in Orange County are lower than the average rates in California for both adults (age 18 and over) and children (ages 1-17). The percentage of adults diagnosed with asthma was reported as 6.0 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 9.5 percent in Orange County compared to 10.1 percent for the state in general (Wolstein et al., 2010).

Air Toxics Emission Estimates

The Multiple Air Toxics Exposure Study (MATES) is a monitoring and evaluation study conducted in the South Coast Air Basin (Basin). The study is a series of follow-up to previous air toxics studies in the Basin. As a follow-up to the Multiple Air Toxics Exposure Study II and III (MATES II and III), SCAQMD commenced a fourth MATES study (MATES IV) in 2012. The final report of MATES IV was published May 1, 2015. The MATES IV Study included a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk across the Basin. The study focused on the carcinogenic risk from exposure to air toxics but does not estimate mortality or other health effects from particulate exposures. The results of MATES IV study showed a continuing downward trend in TACs.

The comparison of county-wide population-weighted risk in Table 4-5 in the final report of MATES IV shows TAC reductions that occurred in Los Angeles County, with values decreasing from 951 per million in 2005 to 415 per million in 2012. South Coast Air Basin (SCAB) data follow the same trend, with corresponding TACs decreasing from 853 per million in 2005 to 367 per million in 2012. The reducing trend in air toxic levels and risks shows the improvement in air toxics emissions and exposures (MATES IV 2015). The MATES V Study is expected to begin in early 2018 (SCAQMD 2018a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This section discusses toxic air contaminant (TAC) emissions to which the public could be exposed during project construction and routine operation. Following the release of TACs into the air, water or soil, people would come into contact with them through inhalation, dermal contact, or ingestion via contaminated food, water or soil.

Air pollutants for which no ambient air quality standards have been established are called non-criteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, non-criteria pollutants have no ambient (outdoor) air quality standards that specify health-based levels considered safe for everyone[2]. Since non-criteria pollutants do not have such standards, a health risk assessment (HRA) is used to determine if people might be exposed to those types of pollutants at unhealthy levels.

The standard approach currently used for a HRA involves four steps: 1) hazard identification, 2) exposure assessment, 3) dose-response assessment and 4) risk characterization (OEHHA, 2003). These four steps are briefly discussed below:

1. **Hazard identification** is conducted to determine the potential health effects that could be associated with project emissions. For air toxics sources, the main purpose is to identify whether or not a hazard exists. Once a hazard has been identified, staff evaluates the exact toxic air contaminant(s) of concern and determines whether a TAC is a potential human carcinogen or is associated with other types of adverse health effects.

2. **An exposure assessment** is conducted to estimate the extent of public exposure to project emissions, including: (1) the worst-case concentrations of project emissions in the environment using dispersion modeling; and (2) the amount of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact. Therefore, this step involves emissions quantification, modeling of environmental transport and dispersion, evaluation of environmental fate, identification of exposure routes, identification of exposed populations and sensitive subpopulations, and estimation of short-term and long-term exposure levels.

[2] Carbon dioxide (CO_2) is also a non-criteria pollutant, but it is also not considered a TAC at normal concentrations and is not evaluated in this analysis.

3. **A dose-response assessment** is conducted to characterize the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations. The assumptions and methodologies of dose-response assessment are different between cancer and noncancer health effects. In cancer risk assessment, the dose-response relationship is expressed in terms of a potency (or slope) factor that is used to calculate the probability of getting cancer associated with an estimated exposure.

   In cancer risk assessment, it is assumed that risk is directly proportional to dose. It is also assumed that there is no threshold for carcinogenesis. In non-cancer risk assessment, dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer Reference Exposure Levels (RELs). The acute and chronic RELs are defined as the concentration at which no adverse non-cancer health effects are anticipated. Unlike cancer health effects, non-cancer acute and chronic health effects are generally assumed to have thresholds for adverse effects. In other words, acute or chronic injury from a TAC would not occur until exposure to the pollutant has reached or exceeded a certain concentration (i.e., threshold).

4. **Risk characterization** is conducted to integrate the health effects and public exposure information and to provide quantitative estimates of health risks resulting from project emissions. Staff characterizes potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Staff conducts its public health analysis by evaluating the information and data provided in the AFC by the applicant. Staff also relies upon the expertise and guidelines of the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) in order to: (1) identify contaminants that cause cancer or other noncancer health effects, and (2) identify the toxicity, cancer potency factors, and non-cancer RELs of these contaminants. Staff relies upon the expertise of the California Air Resources Board (ARB) and local air districts to conduct ambient air monitoring of TACs and on the California Department of Public Health to evaluate pollutant impacts in specific communities. It is not within the purview or the expertise of the Energy Commission staff to duplicate the expertise and statutory responsibility of these agencies.

For each project, a screening-level risk assessment is initially performed using simplified assumptions that are intentionally biased toward protection of public health. That is, staff uses an analysis designed to overestimate public health impacts from exposure to project emissions. It is likely that the actual risks from the source in question would be much lower than the risks as estimated by the screening-level assessment. The risks for such screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those assumptions in the assessment. Such an approach usually involves the following:

- using the highest levels of pollutants that could be emitted from the plant;
- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;

- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- assuming that an individual's exposure to carcinogenic (cancer-causing) agents would occur continuously for 30[3] years (SERC 2017d, Table 5.9-8); and
- using health-based objectives aimed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

Effective August 2012, all air toxics HRAs should use the new OEHHA's Air Toxics Hot Spots Program Risk Assessment Guideline (OEHHA 2012) which recommends breaking down exposure/risk by age group using age-dependent adjustment factors (i.e. age sensitivity factors) to calculate the cancer risk. This new methodology is used to reflect the fact that exposure varies among different age groups and exposure occurring in early life has a higher weighting factor[4].

A screening-level risk assessment would, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities would also emit certain substances (e.g. semi-volatile organic chemicals and heavy metals) that could present a health hazard from non-inhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these multi-pathway substances are present in facility emissions, the screening-level analysis would include the following additional exposure pathways: soil ingestion, dermal exposure, consumption of locally grown plant foods, mother's milk and water ingestion[5] (OEHHA 2003, p. 5-3).

The HRA process addresses three categories of health impacts: (1) acute (short-term) health effects, (2) chronic (long-term) noncancer effects, and (3) cancer risk (also long-term). They are discussed below.

Acute Noncancer Health Effects

Acute health effects are those that result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Such effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract.

[3] In 2015 Guidance, OEHHA recommends that an exposure duration (residency time) of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR). In addition, for the maximally exposed individual worker (MEIW), OEHHA now recommends using an exposure duration of 25 years to estimate individual cancer risk for off-site workers (OEHHA 2015, Table 8.5). The applicant didn't use 25 year exposure due to the insignificance of the 30 year risk values (SERC 2017d, Table 5.9-8).

[4] Fetuses, infants and children are more susceptible than adults to TACs. Therefore, higher weighting factors are assigned to these life stages.

[5] The HRA exposure pathways for SERC included inhalation, home grown produce, dermal absorption, soil ingestion, and mother's milk, not including water ingestion because water sources are not impacted by the project.

Chronic Noncancer Health Effects

Chronic noncancer health effects are those that result from long-term exposure to lower concentrations of pollutants. Long-term exposure is defined as more than 12 percent of a lifetime, or about eight years (OEHHA 2003, p. 6-5). Chronic noncancer health effects include heart and respiratory system diseases that reduce breathing efficiency such as asthma.

Reference Exposure Levels (RELs)

The analysis for both acute and chronic noncancer health effects compares the maximum project contaminant levels to safe levels known as Reference Exposure Levels, or RELs. These are amounts of toxic substances to which even sensitive individuals could be exposed without suffering any adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are specifically designed to protect the most sensitive individuals in the population, such as infants, the aged, and people with specific illnesses or diseases which make them more sensitive to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include specific margins of safety. The margins of safety account for uncertainties associated with inconclusive scientific and technical information available at the time of setting the RELs. They are therefore meant to provide a reasonable degree of protection against hazards that research has not yet identified.

Concurrent exposure to multiple toxic substances would result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with California Air Pollution Control Officers Association (CAPCOA) guidelines, the HRA assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other possible mechanisms due to multiple exposures include those cases where the actions would be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of exposures, the health risk assessment could underestimate or overestimate the risks.

Cancer Risks

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the carcinogen would occur over a 70-year lifetime[6]. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound estimate based on the worst-case assumptions.

[6] See footnote 4.

Cancer Potency Factors

Cancer risk is expressed in terms of chances per million of developing cancer. It is a function of the maximum expected pollutant concentration, the probability that a particular pollutant would cause cancer (called potency factors), and the length of the exposure period. Cancer risks for individual carcinogens are added together to yield a total cancer risk for each potential source. The conservative nature of the screening assumptions used means that the actual cancer risks from project emissions would be considerably lower than estimated.

As previously noted, the screening analysis is performed to assess the worst-case risks to public health associated with the proposed project. If the screening analysis were to predict a risk below significance levels, no further analysis would be necessary and the source would be considered acceptable with regard to carcinogenic effects. If, however, the risk were to be above the significance level, then further analysis using more realistic site-specific assumptions would be performed to obtain a more accurate estimate.

SIGNIFICANCE CRITERIA

Energy Commission staff assesses the maximum cancer impacts from specific carcinogenic exposures by first estimating the potential impacts on the maximally exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using the worst-case assumptions. Since the individual's exposure would produce the maximum impacts possible around the source, staff uses this risk estimate as a marker for acceptability of the project's carcinogenic impacts.

Acute and Chronic Noncancer Health Risks

As described earlier, non-criteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, and the noted cancer impacts from long-term exposures. The significance of project-related impacts is determined separately for each of the three health effects categories. Staff assesses the noncancer health effects by calculating a hazard index. A hazard index is a ratio obtained by comparing exposure from facility emissions to the safe exposure level (i.e. REL) for that pollutant. A ratio of less than 1.0 suggests that the worst-case exposure would be below the limit for safe levels and would thus be insignificant with regard to health effects.

The hazard indices for all toxic substances with the same type of health effect are added together to yield a Total Hazard Index for the source. The Total Hazard Index is calculated separately for acute effects and chronic effects. A Total Hazard Index of less than 1.0 would indicate that cumulative worst-case exposures would not lead to significant noncancer health effects. In such cases, asthma and other noncancer health impacts would be considered unlikely even for sensitive members of the population. Staff would therefore conclude that there would be no significant asthma and other noncancer project-related public health impacts. This assessment approach is consistent with risk management guidelines of both California OEHHA and U.S. EPA.

Cancer Risk

Staff relies upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986 (Health & Safety Code, §§25249.5 et seq.), for guidance in establishing significance levels for carcinogenic exposures. Title 22, California Code of Regulations, section 12703(b) states that "the risk level which represents no significant risk shall be one which is calculated to result in one or less excess cancer cases within an exposed population of 100,000, assuming lifetime exposure." This risk level is equivalent to a cancer risk of 10 in 1 million, which is also written as 10×10^{-6}. In other words, under state regulations, an incremental cancer risk greater than 10 in 1 million from a project should be regarded as suggesting a potentially significant carcinogenic impact on public health. The 10 in 1 million risk level is also used by the Air Toxics "Hot Spots" (AB 2588) program as the public notification threshold for air toxic emissions from existing sources.

An important distinction between staff's and the Proposition 65 risk characterization approach is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all the cancer-causing pollutants to which the individual might be exposed in the given case. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than the manner applied by Proposition 65. The significant risk level of 10 in 1 million is also consistent with the level of significance adopted by many California air districts. In general, these air districts would not approve a project with a cancer risk estimate of more than 10 in 1 million.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection could be ensured. Staff's analysis also addresses potential impacts on all segments of the population, including the young, the elderly, and individuals with existing medical conditions that would render them more sensitive to the adverse effects of toxic air contaminants and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, staff uses the most current acceptable public health exposure levels (both acute and chronic) set to protect the public from the effects of air toxics being analyzed. When a screening analysis shows the cancer risks to be above the significance level, refined assumptions would be applied for likely a lower, more realistic, risk estimate. If, after refined assumptions, the project's risk is still found to exceed the significance level of 10 in 1 million, staff would recommend appropriate measures to reduce the risk to less than significant levels. If, after all feasible risk reduction measures have been considered and a refined analysis still identifies a cancer risk of greater than 10 in 1 million, staff would deem such a risk to be significant and would not recommend project approval.

PROPOSED PROJECT'S CONSTRUCTION IMPACTS AND MITIGATION MEASURES

The construction for the project would take total approximately 10 months, followed by two months of startup and commissioning (CEC 2018f). Construction of the generating facility from site preparation and grading to commercial operation is expected to take place from November 2018 to December 2019 (approximately 14 months total) (SERC 2016a, Section 2.1.16).

The potential construction risks are normally associated with exposure to fugitive dust and combustion emissions (i.e. diesel exhaust).

Fugitive Dust

Fugitive dust is defined as dust particles that are introduced into the air through certain activities such as soil cultivation, vehicles operating on open fields, or dirt roadways. Fugitive dust emissions during construction of the proposed project could occur from:

- dust entrained during site preparation and grading/excavation at the construction site;
- dust entrained during onsite movement of construction vehicles on unpaved surfaces;
- fugitive dust emitted from an onsite concrete batch plant; and
- wind erosion of areas disturbed during construction activities.

The effects of fugitive dust on public health are covered in the **Air Quality** section of this FSA which includes staff's recommended mitigation measures, including **AQ-SC3** (Construction Fugitive Dust Control) and **AQ-SC4** (Dust Plume Response Requirement) to prevent fugitive dust plumes from leaving the project boundary. As long as the dust plumes are kept from leaving the project site, there would be no significant concern of fugitive dust adversely affecting public health.

Diesel Exhaust

Emissions of combustion byproducts during construction would result from:

- exhaust from diesel construction equipment used for site preparation, grading, excavation, trenching, and construction of onsite structures;
- exhaust from water trucks used to control construction dust emissions;
- exhaust from portable welding machines, small generators, and compressors;
- exhaust from diesel trucks used to transport workers and deliver concrete, fuel, and construction supplies to construction areas; and
- exhaust from vehicles used by construction workers to commute to and from the project areas.

Construction Health Risk Assessment (HRA) for Diesel Exhaust

The primary air toxic pollutant of concern from construction activities is diesel particulate matter (diesel PM or DPM). Diesel exhaust is a complex mixture of thousands of gases and fine particles and contains over 40 substances listed by the U.S. Environmental Protection Agency (EPA) as hazardous air pollutants (HAPs) and by ARB as toxic air contaminants. The diesel particulate matter (DPM) is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves particular attention mainly because of its ability to induce serious noncancer effects and its status as a likely human carcinogen.

Diesel exhaust is also characterized by ARB as “particulate matter from diesel-fueled engines.” The impacts from human exposure would include both short- and long-term health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the EPA as “likely to be carcinogenic to humans” (U.S. EPA 2003).

Based on a number of health effects studies, the Scientific Review Panel (SRP) on Toxic Air Contaminants in 1998 recommended a chronic REL for diesel exhaust particulate matter of five micrograms per cubic meter of air ($\mu g/m^3$) and a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$. However, SRP did not recommend a specific value for an acute REL since available data in support of a value was deemed insufficient. Therefore, there is no acute relative exposure level (REL) for diesel particulate matter, and it was not possible to conduct an assessment for its acute health effects. In 1998, ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved the panel’s recommendations regarding health effects (OEHHA 2009, Appendix A). In 2000, ARB developed a “Risk Reduction Plan to Reduce Particulate Matter Emissions From Diesel-Fueled Engines and Vehicles” and has been developing regulations to reduce diesel particulate matter emissions since that time.

A screening HRA for diesel particulate matter was conducted to assess the potential impacts associated with diesel emissions during the construction activities at Stanton. This HRA was based on the annual average emissions of diesel particulate matter (DPM), assumed to occur each year for 1 year of continuous exposure for construction (the construction period is expected to be 12 months, including 10 months of construction and 2 months of power plant commissioning). The results are listed in the upper portion of **Public Health Table 2** (SERC 2016b, page 5.1D-9 and Table 5.1D-5).

Construction of Stanton Energy Reliability Center

The HRA results for the short-term construction activities show the calculated point of maximum impact or PMI is 4.15 in 1 million. This risk number is less than the Energy Commission staff’s significant impact threshold of 10 in a million. Therefore, staff concludes that there is no significant cancer health risk from the toxic air emissions from construction activities.

The predicted chronic health index at the PMI is 0.00550 (SERC 2016b, Table 5.1D-5), much lower than the significance level of 1.0. This means that there would be no chronic non-cancer impacts expected from construction activities.

Public Health Table 2
Construction Hazard/Risk from DPMs

		Significance Level [a]	Significant? [a]
Derived Cancer Risk (per million)	4.15	10	No
Chronic HI (dimensionless)	0.0055	1	No

Sources: SERC 2016b (Table 5.1D-5).
[a] The significance level is a level that does not necessarily mean that adverse impacts are expected, but rather that further analysis and refinement of the exposure assessment is warranted.

Based on the results of HRA, and considering that the potential exposure of DPM would be sporadic and limited in length, staff concludes that impacts associated with the DPM from the proposed Stanton construction activities would be less than significant.

Condition of Certification **AQ-SC5** (Diesel-Fueled Engine Control) in the **Air Quality** section of this FSA would ensure that cancer-related impacts of diesel exhaust emissions for the public and off-site workers are mitigated during construction to a point where they are not considered significant. The potential levels of criteria pollutants from operation of construction -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).

PROPOSED PROJECT'S OPERATIONAL IMPACTS AND MITIGATION MEASURES

Emission Sources

As previously noted, the only emission sources of the proposed project would be two General Electric (GE) LM6000 PC SPRINT natural gas-fired, simple-cycled combustion turbine generators (CTGs). There is no diesel fuel source from this project during operation. Pollutants that could potentially be emitted during operation are listed in **Public Health Table 3,** including both criteria and non-criteria pollutants. These pollutants include certain volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Criteria pollutant emissions and impacts are examined in staff's **Air Quality** analysis.

The health risk from exposure to each project-related pollutant is assessed using the "worst case" emission rates and impacts. Maximum hourly emissions are used to calculate acute (one-hour) noncancer health effects, while estimates of maximum emissions on an annual basis are used to calculate cancer and other chronic (long-term) health effects.

In Tables 5.9-3, Table 5.9-4 and Table 5.9-5 of the AFC (SERC 2017d), the applicant lists the specific non-criteria pollutants that would be emitted as combustion byproducts from the natural gas-fired turbines. Tables 5.9-4 and 5.9-5 present the estimated toxic pollutant emissions from the facility processes (SERC 2017d Section 5.9.2.3). The detailed emission summaries and calculations are presented in Table 5.1A-4 (SCAQMD 2017a). The emission factors used by Stanton (SCAQMD 2017a) are based on AP-42 (Compilation of Air Pollutant Emission Factors), which is SCAQMD-approved (SCAQMD 2018g, page 56).

The regulation applied to gas turbines located at major sources of HAP emissions is 40CFR Part 63 Subpart YYYY. A major source is defined as a facility with emissions of ten tons per year (tpy) or more of a single HAP, or 25 tpy or more of a combination of HAPs based on the potential to emit. According to Table 24 - Toxic Air Contaminants/Hazardous Air Pollutants per Turbines in the Final Determination of Compliance (FDOC), the total combined formaldehyde emissions from all sources is 0.152 tpy, which is less than 10 tpy. The total combined HAPs from all sources is 0.338 tpy, which is less than 25 tpy. Therefore, this subpart is not applicable because Stanton would not be a major source for HAPs emissions and is not subject to this subpart (SCAQMD 2018g, Page 56-57, and 128).

Public Health Table 3
The Main Pollutants Emitted from the Proposed Project

Criteria Pollutants	Non-criteria Pollutants
Carbon monoxide (CO)	Ammonia
Oxides of nitrogen (NO_x)	Acetaldehyde
Particulate matter (PM10 and PM2.5)	Acrolein
Oxides of sulfur (SO_2)	Benzene
Volatile Organic Compounds (VOCs)	1,3-Butadiene
	Ethylbenzene
	Formaldehyde
	Hexane
	Naphthalene
	Polycyclic Aromatic Hydrocarbons (PAHs)
	Propylene
	Propylene Oxide
	Toluene
	Xylene

Source: SERC 2017d, Table 5.9-3, Table 5.9-4 and Table 5.9-5.

Hazard Identification

Numerous health effects have been linked to exposure to TACs, including development of asthma, heart disease, Sudden Infant Death Syndrome (SIDS), respiratory infections in children, lung cancer, and breast cancer (OEHHA, 2015). According to the AFC, the toxic air contaminants emitted from the natural gas-fired CTGs include ammonia, acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, hexane, naphthalene, polycyclic aromatic hydrocarbons (PAHs), propylene, propylene oxide, toluene, and xylene. **Public Health Table 3** and **Public Health Table 4** list each such pollutant which staff finds to be typical of the proposed project and similar projects.

Exposure Assessment

Public Health Table 4 shows how TACs would contribute to the total risk obtained from the risk analysis. The applicable exposure pathways for the toxic emissions include inhalation, home-grown produce, dermal (through the skin) absorption, soil ingestion, and mother's milk. This method of assessing health effects is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) referred to earlier.

The next step in the assessment process is to estimate the project's incremental concentrations using a screening air dispersion model and assuming conditions that would result in maximum impacts. The applicant used the EPA-recommended air dispersion model, AERMOD, along with five compatible meteorological data (from 2006 to 2009 and 2012) from the Anaheim monitoring station (SERC 2017d, Section 5.9.2.4 SERC 2016a, Section 5.1.7, and SERC 2016b, Appendix 5.1B).

Public Health Table 4
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Ammonia				✔	✔
Acetaldehyde			✔	✔	✔
Acrolein				✔	✔
Benzene			✔	✔	✔
1,3-Butadiene			✔	✔	
Ethyl Benzene			✔	✔	
Formaldehyde			✔	✔	✔
Naphthalene		✔	✔	✔	
Polycyclic Aromatic Hydrocarbons (PAHs)	✔		✔		
Propylene				✔	
Propylene Oxide			✔	✔	✔
Toluene				✔	✔
Xylene				✔	✔

Source: OEHHA / ARB 2017 and SERC 2017d, Table 5.9-6

Dose-Response Assessment

Public Health Table 5 (modified from AFC Table 5.9-6, including neither oral cancer potency factor nor chronic oral REL[7]) lists the toxicity values used to quantify the cancer and noncancer health risks from the project's combustion-related pollutants. The listed toxicity values include RELs and the cancer potency factors are published in the OEHHA Guidelines (OEHHA 2003) and OEHHA/ARB Consolidation Table of OEHHA/ARB Approved Risk Assessment Health Values (ARB 2017). RELs are used to calculate short-term and long-term noncancer health effects, while the cancer potency factors are used to calculate the lifetime risk of developing cancer.

Public Health Table 5
Toxicity Values Used to Characterize Health Risks

Toxic Air Contaminant	Inhalation Cancer Potency Factor $(mg/kg\text{-}d)^{-1}$	Chronic Inhalation REL $(\mu g/m^3)$	Acute Inhalation REL $(\mu g/m^3)$
Ammonia	—	200	3,200
Acetaldehyde	0.010	140	470 (1-hr) 300 (8-hr)
Acrolein	—	0.35	2.5 (1-hr) 0.7 (8-hr)
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	—
Naphthalene	0.12	9.0	—
Polycyclic Aromatic Hydrocarbons (PAHs)	3.9	—	—
Propylene	—	3000	—
Propylene Oxide	0.013	30	3100
Toluene	—	300	37,000
Xylene	—	700	22,000

Sources: ARB 2017 and SERC 2017d, Table 5.9-6

Characterization of Risks from TACs

As described above, the last step in an HRA is to integrate the health effects and public exposure information, provide quantitative estimates of health risks resulting from project emissions, and then characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

[7] Except for PAHs, there are neither oral cancer slope factors nor chronic oral reference exposure levels available for these toxic air contaminants. The oral cancer slope factor for PAHs is 12 $(mg/kg\text{-}d)^{-1}$.

The applicant's HRA was prepared using the ARB's HARP model, version 2 (ARB, 2015). Emissions of non-criteria pollutants from the project were analyzed using emission factors. As noted previously, these emission factors were obtained from the U.S. EPA AP-42 emission factors. Air dispersion modeling combined the emissions with site-specific terrain and meteorological conditions to analyze the mean short-term and long-term concentrations in air for use in the HRA. Ambient concentrations were used in conjunction with cancer unit risk factors and RELs to estimate the cancer and noncancer risks from operations. In the following sub-sections, staff reviews and summarizes the work of the applicant, and evaluates the adequacy of the applicant's analysis by conducting an independent HRA.

The HRA was conducted for the general population, nearby residences, off-site workers and sensitive receptors. Staff only evaluates the health impact on off-site workers because on-site workers are protected by Cal OSHA and are not required to be evaluated under the Hot Spots Program, unless the worker also lives on the facility site or property. The sensitive receptors, as previously noted, are subgroups that would be at greater risk from exposure to emitted air toxics, and include the very young, the elderly, and those with existing illnesses.

Health risks potentially associated with ambient concentrations of carcinogenic pollutants were calculated in terms of excess lifetime cancer risks. The total cancer risk at any specific location is found by summing the contributions from the individual carcinogens. Health risks from non-cancer health effects were calculated in terms of hazard index as a ratio of ambient concentration of TACs to RELs for that pollutant.

The following is a summary of the most important elements of HRA for Stanton:

- the analysis was conducted using the latest version of ARB/OEHHA Hotspots Analysis and Reporting Program Version 2 (HARP2)[8], which incorporates methodology presented in OEHHA's 2015 Guidance;
- emissions are based upon concurrent operation of all on-site sources, including two General Electric (GE) LM6000 PC SPRINT natural gas-fired, simple-cycled combustion turbine generators (CTGs);
- exposure pathways included inhalation, soil ingestion, dermal absorption, home grown produce, and mother's milk;
- the local meteorological data, local topography, grid, residences and sensitive receptors, source elevations, and site-specific and building-specific input parameters used in the HARP2 model were obtained from the AFC and modeling files provided by the applicant;
- the emission factors and toxicity values used in HRA were obtained from the AFC. The toxicity values are listed in **Public Health Table 5**.

[8] 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 HRA is the numerical cancer risk for the maximally exposed individual (MEI) which is the individual located at the point of maximum impact (PMI) and risks to the MEI at a residence (MEIR). As previously noted, human health risks associated with emissions from the proposed project are unlikely to be higher at any other location than at the PMI. Therefore, if there is no significant impact associated with concentrations at the PMI location, it can be reasonably assumed that there would not be significant impacts in any other location in the project area.

The cancer risk to the MEI at the PMI is referred to as the Maximum Incremental Cancer Risk (MICR). However, the PMI (and thus the MICR) is not necessarily associated with actual exposure because in many cases, the PMI is in an uninhabited area. Therefore, the MICR is generally higher than the maximum residential cancer risk. MICR is based on 24 hours per day, 365 days per year, 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 6**, total worst-case individual cancer risk is 0.0714 in one million at the PMI. The PMI for impacts from operation is approximately 0.14 miles northeast from the project boundary. As **Public Health Table 6** shows, the cancer risk value at PMI is far below the significance level, ten in one million, indicating that no significant adverse cancer risk is expected.

Chronic and Acute Hazard Index (HI)

The screening HRA for the project included emissions from all sources and resulted in a maximum chronic Hazard Index (HI) of 0.0000977 and a maximum acute HI of 0.00166. As **Public Health Table 6** shows, both acute and chronic hazard indices are much less than 1.0, indicating that no short- or long-term adverse health effects such as asthma and other respiratory effects are expected.

Project-Related Impacts at Area Residences

Staff's specific interest is the risk to the maximally exposed individual in a residential setting (MEIR). This is because this risk most closely represents the maximum project-related lifetime cancer risk. Residential risk is presently assumed by the regulatory agencies to result from exposure lasting 24 hours per day, 365 days per year, over a 30-year lifetime. Exposure to off-site nonresident workers or recreational users would be lower with correspondingly lower health risks. Residential risks were presented in terms of MEIR and health hazard index (HI) at residential receptors in **Public Health Table 6**. The cancer risk for the MEIR is 0.0531, which is well below the significance level. The maximum resident chronic HI and acute HI are 0.0000727 and 0.00122, respectively. They are both much less than 1.0, indicating that no short- or long-term adverse health effects are expected at these residences.

Risk to Workers

The cancer risk to potentially exposed, both project and offsite, nonresidential workers was presented in terms of risk to the maximally exposed individual worker (or MEIW at PMI) and is summarized in **Public Health Table 6**. The worker is assumed to be exposed at the work location 8 hours per day, instead of 24; 245 days per year, instead of 365; and for 25 years, instead of 30 years. But because of the insignificance of the 30 year risk values, the risk values to workers (including MEIW) in Stanton have not been adjusted for a 25-year exposure (SERC 2017d, Table 5.9-8).

As shown in **Public Health Table 6**, the cancer risk for workers at MEIW (i.e. 0.0407 in 1 million) is well below the significance level. The maximum worker chronic HI and acute HI are 0.0000557 and 0.00144, respectively. They are both much less than 1.0, indicating that no short- or long-term adverse health effects are expected among exposed workers.

Risk to Sensitive Receptors

Several sensitive receptors are located close to Stanton. The nearest school, Robert M. Pyles Elementary School, is located approximately 0.3 miles to the north of the project boundary. The highest cancer risk at this sensitive receptor is 0.022 in one million, the chronic HI is 0.0000301 and the acute HI is 0.00128. Another school (Stepping Stones Learning Center) is located approximately 0.34 miles northeast of the project boundary. The highest cancer risk at this sensitive receptor is 0.0513 in one million, the chronic HI is 0.0000702 and the acute HI is 0.001. The nearest health facility is located approximately 2.42 miles northeast of the project boundary.

The highest cancer risk at this sensitive receptor is 0.0216 in one million, the chronic HI is 0.0000295 and the acute HI is 0.00041. The nearest daycare is located approximately 0.68 miles southwest of the project boundary. The highest cancer risk at this sensitive receptor is 0.0145 in one million, the chronic HI is 0.0000198 and the acute HI is 0.000863. The nearest convalescent home, Blessing Home Care, is located approximately 1.02 miles north of the project boundary. The highest cancer risk at this sensitive receptor is 0.0188 in one million, the chronic HI is 0.0000257 and the acute HI is 0.000617. All risks are well below their significance levels, meaning that there would be an insignificant risk of asthma and other noncancer health impacts.

In **Public Health Table 6**, it is notable that all the cancer and noncancer risks from Stanton operation would be below their respective significance levels. This means that no health impacts would occur within all segments of the surrounding population. Therefore, staff concludes there is no need for conditions of certification to protect public health during facility operation.

Public Health Table 6
Cancer Risk and Chronic Hazard from Stanton Operations

Receptor Location	Cancer Risk (per million)	Chronic HI [d]	Acute HI [d]
PMI [a]	0.0714	0.0000977	0.00166
Residence MEIR [b]	0.0531	0.0000727	0.00122
Worker MEIW [c]	0.0407	0.0000557	0.00144
Sensitive Receptor (Nearest School 1)	0.022	0.0000301	0.00128
Sensitive Receptor (Nearest School 2)	0.0513	0.0000702	0.001
Sensitive Receptor (Nearest Health Facility)	0.0216	0.0000295	0.00041
Sensitive Receptor (Nearest Daycare)	0.0145	0.0000198	0.000863
Sensitive Receptor (Nearest Convalescent Home)	0.0188	0.0000257	0.000617
Significance level	10	1	1
Significant?	No	No	No

Sources: SERC 2017o, Page 5, HRA Summary
[a] PMI = Point of Maximum Impact
[b] MEIR = MEI of residential receptors. Location of the residence of the highest risk with a 30-year residential scenario.
[c] MEIW = MEI for offsite workers. Occupational exposure patterns assuming standard work schedule, i.e. exposure of eight hours/day, five days/week, 49 weeks/year for 25 years. But the MEIW values in Stanton have not been adjusted for a 25 year exposure due to the insignificance of the 30 year risk values.
[d] HI = Hazard Index

Cancer Burden

Cancer burden is defined as the estimated increase in the occurrence of cancer cases in a population resulting from exposure to carcinogenic air contaminants. In other words, it is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with toxic air emissions from the project. Cancer burden is calculated as the maximum product of any potential carcinogenic risk greater than 1 in one million, and the number of individuals at that risk level. Therefore, if a predicted derived adjusted cancer risk is greater than 1 in one million, the cancer burden is calculated for each census block receptor. OEHHA requires a 70-year exposure duration to estimate cancer burden or provide an estimate of population-wide risk (OEHHA 2015, page 8-1).

Staff calculated the population-wide risk at PMI by using a 70-year exposure duration, and the result is 0.084 in one million. Since this risk is much lower than 1 in one million, the cancer burden is zero. The cancer burden is estimated to be less than one cancer case resulting from exposure to TACs of Stanton operation.

CUMULATIVE IMPACTS AND MITIGATION

A project would result in a significant adverse cumulative impact if its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, § 15130). As for cumulative impacts for cumulative hazards and health risks, if the implementation of the proposed project, as well as the past, present, and probable future projects, would not cumulatively contribute to regional hazards, then it could be considered a less than cumulatively considerable impact.

The maximum cancer risk and non-cancer hazard index (both acute and chronic) for operations emissions from the project estimated independently by the applicant, staff, and the SCAQMD (SCAQMD 2018b and SCAQMD 2018g) 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. An analysis of the cumulative impacts is typically only required if the proposed facility is generally within less than 0.5 mile of another existing major or large toxics emissions source. (SERC 2017d, Section 5.9.3 and SERC 2018b, Figure 1).

All Metals Processing (8401 Standustrial Street) is located within a 0.5-mile radius of the Stanton site. However, it is not a major source of HAPs or air toxic pollutants. In addition, the SCE Barre Peaker site is located directly east of the Stanton site, across Dale Ave. This facility is a single, simple-cycle turbine (LM6000 PC) peaker facility, which is only allowed to combust 489 mmscf/yr (million standard cubic feet per year) of natural gas. This firing rate is less than the firing rate for one of the Stanton turbines, and as such the air toxics emissions would be significantly less than the Stanton facility, and not major (SERC 2017d, Section 5.9.3 and SERC 2018b, Table 1).

All other identified facilities are at least 1.5 miles away from Stanton (SERC 2018b, Figure 1). Staff, therefore concludes that the proposed Stanton, even when combined with these projects, would not contribute to cumulative impacts in the area of public health.

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 the presence of an EJ population based on low income. Due to the presence of an EJ population, this analysis must identify whether the construction and operation of the proposed Stanton facility could have significant, unmitigated impacts or disproportionate impacts on the EJ population.

Staff identified the potential public health impacts (i.e. cancer and non-cancer health effects) which could affect the EJ populations represented in **Environmental Justice Figure 1, Figure 2,** and **Table 3**. These potential public health risks were evaluated quantitatively by conducting a health risk assessment, and the results were presented by level of risks. The potential construction risks are normally associated with exposure to fugitive dust and combustion emissions (i.e. diesel exhaust). The potential operation risks are associated with exposure to the toxic air contaminants emitted from the natural gas-fired combustion turbine generator (CTGs) including ammonia, acetaldehyde, acrolein, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, hexane, naphthalene, PAHs, propylene, propylene oxide, toluene, and xylene. Staff concluded that no one (including the public, off-site nonresidential workers, recreational users, and EJ populations) would experience any acute or chronic cancer or non-cancer effects of health significance during construction and operation of the proposed project. Therefore, construction and operation of the project would not cause significant adverse direct, indirect, or cumulative public health impacts from the project's toxic air emissions. As the public health impacts are calculated for sensitive populations, such as the EJ population and the project's toxic air emissions would not have a significant impact on the most sensitive population, the project's impact would not disproportionately impact the EJ population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3**. Please refer to the **Environmental Justice** section of this document for a full explanation of how staff determines the presence of EJ populations.

DISADVANTAGED COMMUNITIES

CalEnviroScreen indicators are used to measure factors that affect the potential[9] for pollution impacts in communities (OEHHA 2017). Staff used CalEnviroScreen 3.0 to identify disadvantaged communities[10] in the vicinity of the proposed project that may have been missed when screening by race/ethnicity and poverty (see **Environmental Justice Figure 1**). The PMI for impacts from operation is approximately 0.14 miles northeast from the project boundary. The project is located in a disadvantaged community census tract (Tract 6059087803). As discussed previously, since impacts at the PMI are less than significant from a public health perspective, it can be reasonably assumed that there would not be significant impacts at any other location, including the disadvantaged community census tracts in the project's 6-mile radius. Also, as previously noted, staff's analysis of potential health impacts was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population, such as an EJ population.

[9] It is important to note that CalEnviroScreen is not an expression of health risk and does not provide quantitative information on increases of impacts for specific sites or project. CalEnviroScreen uses the criteria of "proximity" to a hazardous waste site, a leaking underground tank, contaminated soil, an emission stack (industry, power plant, etc.) to determine that a population is "impacted". It does not address general principles of toxicology: dose/response and exposure pathways. For certain toxic chemicals to pose a risk to the public, offsite migration pathways must exist (through ingestion, inhalation, dermal contact, etc.) and contact to a certain amount – not just any amount – must exist.

[10] 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 or above the 75th percentile (CALEPA 2014). As a comparative screening tool, it is not intended to be used as a health or ecological risk assessment for a specific area or site.

CalEnviroScreen Overall Scores

Census tracts are identified in CalEnviroScreen 3.0 as disadvantaged communities if they have CalEnviroScreen scores at or above the 75th percentile. Census tracts near the Stanton site with scores at 75 percent or above are shown in **Public Health Table 7**. Values are shown as percentiles, which indicate the relative ranking of the census tract with respect to all of the census tracts in California. A higher percentile indicates a higher potential relative burden. The census tracts with CalEnviroScereen scores above the 75th percentile and within the 3-mile radius from Stanton are highlighted.

Stanton would be located in the census tract 6059087803. Among the seven adjacent cencus tracts[11], only census tract 6059087805 and 6059087901 are listed as disadvantaged communities. As noted previously, since cumulative public health impacts are usually not significant unless the emitting sources are extremely close to each other (within a few blocks, not miles), an analysis of the cumulative impacts is typically only required if the proposed facility is generally within less than 0.5 mile of another existing major or large toxics emissions source. Therefore, staff's discussion focuses on these three census tracts: 6059087803, 6059087805 and 6059087901. Staff also includes census tracts 6059088101 and 6059087806, disadvantaged communities less than 1.5 mile from Stanton. The pink highlighted rows in **Public Health Table 7** below are the census tracts of staff's focus.

Public Health Table 7
CalEnviroScreen 3.0 Indicator Percentile Scores (%)

Disadvantaged Communities by Census tract in the Project's Six-Mile Radius[1]									
Census Tract	Total Population	CES 3.0 Percentile	Diesel PM	Pesticides	Toxic Release	Traffic Density	Asthma	Low Birth Weight	Cardiovascular Disease
6059011601	7,955	93.66	82.15	0.00	**91.87**	**98.55**	60.25	45.23	77.53
6059011602	5,237	86.95	81.41	0.00	**96.05**	**98.31**	43.54	47.02	43.00
6059086602	6,131	78.58	60.16	0.00	**93.95**	79.48	55.44	49.89	62.26
6059086601	9,584	88.60	82.12	0.00	**93.13**	**99.29**	57.47	25.76	71.77
6059086501	4,848	80.57	69.61	0.00	**94.90**	**98.30**	55.21	30.26	43.47
6059086702	7,094	89.10	51.49	13.33	**92.28**	**98.96**	69.68	86.57	87.38
6059087405	5,912	91.18	58.78	0.00	**97.24**	**95.25**	61.44	41.87	50.41
6059087403	3,186	85.67	60.19	0.00	**98.24**	**97.63**	55.01	78.06	42.05
6059110603	8,540	80.72	79.42	0.00	86.07	88.41	66.16	32.40	54.53
6059087102	5,816	84.17	45.68	16.10	**92.40**	**97.77**	69.68	53.21	87.38
6059087504	7,141	77.30	84.82	0.00	**99.80**	**98.93**	43.12	87.90	46.86
6059099601	7,016	84.44	56.22	0.00	**96.32**	**95.38**	34.21	69.49	51.42
6059087404	3,591	80.19	59.17	0.00	**97.13**	50.37	61.44	44.60	50.41
6059086404	6,546	84.08	78.86	0.00	**96.73**	**98.57**	48.16	61.09	32.41

[11] The seven adjacent census tracts include: 6059087805, 6059088001, 6059087901, 6059087802, 6059086902, 6059086903 and 6059087001. Census Tract 6059088001, 6059087802, 6059086902, 6059086903, and 6059087001 are not listed as disadvantaged community census tracts.

Disadvantaged Communities by Census tract in the Project's Six-Mile Radius[1]									
Census Tract	Total Population	CES 3.0 Percentile	Diesel PM	Pesticides	Toxic Release	Traffic Density	Asthma	Low Birth Weight	Cardiovascular Disease
6059087401	3,954	77.85	59.40	0.00	**96.37**	**96.40**	61.44	83.72	50.41
6059087805	6,952	81.33	33.63	67.14	**94.15**	68.83	50.28	48.19	45.82
6059099802	5,111	79.10	55.38	40.24	**97.06**	69.52	39.13	60.00	59.83
6059001801	5,544	80.15	69.42	6.44	86.93	88.33	31.47	90.27	14.00
6059089106	3,973	80.10	48.51	0.00	**99.26**	**93.18**	47.48	85.38	89.12
6059086802	5,913	91.46	40.81	42.42	89.34	**95.96**	69.68	52.98	87.38
6059088802	5,551	75.38	54.41	27.56	**97.59**	**92.56**	38.36	75.65	49.35
6059089004	7,011	86.42	48.31	40.03	**98.12**	61.42	57.32	77.33	63.21
6059088501	6,785	75.55	44.95	0.00	**99.14**	89.21	51.10	37.05	86.21
6059087803*	5,658	87.63	33.83	66.93	**93.75**	76.78	42.20	59.76	29.93
6059099904	6,352	77.70	59.70	50.73	**96.96**	83.28	39.13	47.28	59.83
6059088101	2,078	81.66	39.58	11.39	**98.70**	67.58	44.77	**96.32**	33.89
6059110606	4,590	86.63	86.97	0.00	84.97	76.15	63.03	72.72	50.70
6059001802	7,154	77.13	69.42	2.74	87.78	**92.88**	48.86	31.15	38.65
6059089001	7,154	83.15	48.31	39.92	**97.97**	72.87	56.40	58.80	61.45
6059089003	4,012	92.80	48.31	15.10	**98.72**	**90.61**	47.45	87.33	89.03
6059086502	6,551	90.93	72.64	0.00	**95.55**	**99.01**	53.02	35.14	40.26
6059086701	8,876	77.31	73.17	2.01	**90.12**	**99.21**	64.27	27.59	81.70
6059087901	3,638	76.16	33.67	0.00	**95.14**	74.12	52.45	45.23	43.19
6059110302	6,033	76.02	80.73	49.07	85.43	**97.56**	54.79	44.60	75.48
6059087806	5,702	76.18	33.64	37.64	**94.66**	66.37	68.45	35.14	76.75
6059110500	8,631	93.79	86.36	0.00	84.86	83.42	62.02	57.82	49.52
6037555102	6,526	80.74	37.46	0.00	83.14	30.91	77.22	78.41	76.95
6037555211	5,818	81.18	37.45	0.00	84.07	83.92	60.39	61.58	57.82
6037503902	4,636	75.28	74.98	0.00	83.59	77.93	41.47	88.62	82.25

[1]Disadvantaged Communities census tracts that intersect or are within a six-mile radius of the project site. Indicators with percentiles that are shown as **bold** text are in the 90 percentile or higher. **Source:** OEHHA 2017

*Stanton is located in this census tract.

Notes:

1. Census tract locations are shown in **Environmental Justice Figure 1**.
2. Overall Score Percentile Range incorporates all indicators shown in **Environmental Justice Table 1**.
3. When a geographic area has no indicator value (for example, the census tract has no hazardous waste generators or facilities), it is excluded from the percentile calculation and assigned a score of zero for that indicator.

CalEnviroScreen Indicators related to Public Health

Because a CalEnviroScreen score evaluates multiple pollutants and factors collectively, staff further examined individual contributions of indicators that are relevant to Public Health (see **Environmental Justice Table 1**). These individual contributions of indicators and their scores are presented in **Public Health Table 7**. They fall into two different categories: Exposures in Pollution Burden (Diesel PM, Pesticide, Toxic Releases from Facilities, and Traffic Density) and Sensitive Populations in Population Characteristics (Asthma ER Visits, Low Birth Weight Infants and Cardiovascular Disease).

- **Diesel PM:** This indicator represents how much diesel particulate matter (PM) is emitted into the air within and nearby the census tract. The data are from 2012 California Air Resources Board's (ARB's) emission data from on-road vehicles (trucks and buses) and off-road sources (ships and trains, for example). Among these five census tracts, none of them are higher than the 90th percentile. The scores are fairly low. The highest percentile is 39.58 (in census tract 6059088101), meaning it is higher than 39.58 percent of the census tracts in California. Since none of these five census tracts are with scores at 90 percent or above, diesel PM is not of concern. Also, according to the results of the health risk assessment (HRA) conducted for the project, the impacts associated with the diesel PM from the proposed project construction activities (diesel-fueled equipment) would be less than significant and would not have a significant cumulative contribution to the diesel PM levels in the disadvantaged communities of staff's focus.
- **Pesticide Use:** This indicator represents the reported use of 70 hazardous and volatile pesticides in 2012-2014 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). Therefore, it only presents potential exposure, not actual exposure to pesticides. Among these five census tracts, none of them are higher than the 90th percentile. The highest two census tract percentiles are 67.14 (in Census Tract 6059087805) and 66.93 (in Census Tract 6059087803). The percentile of 67.14 (in Census Tract 6059087805) means it is higher than 67.14% of the census tracts in California. Census Tract 6059087805 has an estimated 27.899 pounds of active ingredients used per square mile. The selected pesticides with highest use in this tract are: a.) Acephate, b.) Chlorothalonil, c.) Malathion, d.) Metalaxyland, and e.) Chlorpyrifos. Since none of these five census tracts are with scores at the 90th percentile or above, pesticide use is not a concern; therefore, the toxic air contaminants emitted from the project would not have a significant cumulative contribution to these disadvantaged communities of staff's focus with the existent potential burden on pesticides.
- **Toxic Releases from Facilities:** The indicator represents modeled air concentrations of chemical releases from large facility emissions in and nearby the census tract. The U.S. Environmental Protection Agency (US EPA) provides public information on the amount of chemicals released into the environment from many facilities. This indicator uses the modeled air concentration and toxicity of the chemical to determine the toxic release score. The data are from 2010. All the five census tracts are higher than the 90th percentile. Among these five census tracts, the highest one is 98.7 (in Census Tract 6059088101), meaning it is higher than 98.7 percent of the census tracts in California. These census tracts are within a 1.5-mile radius of the project. However, according to the results of the HRA, as shown in **Public Health Table 6**, the direct health impacts from operating Stanton project at the point of maximum impact (PMI) approach zero; there would be no significant health impacts from the project's toxic air contaminants. Staff, therefore, concludes that the proposed Stanton, even when combined with the toxic releases from facilities in these census tracts, would not contribute to cumulative impacts in the area of public health.

- **Traffic Density:** This indicator represents the sum of traffic volumes adjusted by road segment length. It is calculated by dividing the traffic volumes by the total road length within 150 meters of the census tract boundary. It is not a measure of level of service (LOS) on roadways. The data is from 2013. Among the five census tracts of staff's focus, none of them are higher than the 90th percentile. The highest one is 76.78 (in census tract 605908780), meaning it is higher than 76.78 percent of the census tracts in California. The traffic volumes in this census tract are 9,524.91 vehicle-kilometers/hour, which is divided by 7.61 kilometers of roadways within 150 meters of the census tract boundary. Traffic Density is related to the diesel PM emitted from vehicles. According to the results of the HRA, the impacts associated with the diesel PM from the proposed project construction activities would be less than significant; there would be no significant health impacts from the project's diesel PM. Furthermore, while construction workforce and project supply delivery traffic would be added to the area roadways, there is no operations staff for the project, no traffic would be permanently added to the area roadways by this project. Staff concluded that the project's construction traffic and diesel PM emitted from the project would not have a significant cumulative contribution to the diesel PM-related traffic density in the disadvantaged communities.
- **Asthma ER Visits:** This indicator is a representation of an asthma rate. It measures the number of emergency room visits for asthma per 10,000 people over the years 2011 to 2013. The information was collected by the California Office of Statewide Health Planning and Development. Among these five census tracts, none of them are higher than the 90th percentile. The highest percentile is 68.45 (in Census Tract 6059087806), meaning the asthma ER visitation rate is higher than 68.45 percent of the census tracts in California. Since none of the percentiles of these five census tracts are in the 90th percentile or above, asthma is not a concern. For more detailed discussion regarding asthma, please refer to the discussion in the section of Existing Public Health Concerns.
- **Low Birth Weight Infants:** This indicator represents the percent of low birth weight babies in the census tract. It measures the percentage of babies born weighing less than 2500 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. Among these five census tracts, Census Tract 6059088101 is the one census tract of the five census tracts with the highest potential relative burden. The low birth weight percentile for this census tract is 96.32, meaning the percent low birth weight is higher than 96.32 percent of the census tracts in California. In its total of 2,078 people, 7.93 percent of births in this census tract were of low birth weight. 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, the risk of the nearest sensitive receptor (i.e. Robert M. Pyles Elementary School) is below health-based thresholds. Therefore, the toxic emissions from the project would not cause significant health effects for the low birth weight infants in these disadvantaged communities or have a significant cumulative contribute to these disadvantaged communities.

- **Cardiovascular Disease:** This indicator represents the rate of heart attacks. It measures the number of emergency department visits for acute myocardial infarction (or heart attack) per 10,000 people over the years 2011 to 2013. Among these five census tracts, none are higher than 90 percentile. The highest is 76.75 in Census Tract 6059087806, meaning it is higher than 76.75% of the census tracts in California. 10.28 people per 10,000 in this census tract (5,702 people) visited the emergency department for a heart attack. Negative health effects including heart disease are associated with increased exposure to toxic air contaminants. However, according to the results of the HRA, as shown in **Public Health Table 6**, the direct noncancer health impacts (i.e. chronic health index [HI]) from operating the Stanton project at the point of maximum impact (PMI) approach zero; there would be no significant health impacts (including cardiovascular diseases) from the project's toxic air contaminants. Therefore, the toxic air contaminants emitted from the project would not have a significant cumulative contribution to cardiovascular disease in the disadvantaged communities.

CONCLUSION

Staff concluded that no one (including the public, off-site nonresidential workers, recreational users, and EJ populations) would experience any acute or chronic cancer or non-cancer effects of health significance during construction and operation of the proposed project and construction and operation of the project would not cause significant adverse direct, indirect, or cumulative public health impacts from the project's toxic air emissions. As the public health impacts are calculated for sensitive populations, such as the EJ population, and the project's toxic air emissions would not have a significant impact on the most sensitive population, the project's impact would not disproportionately impact the EJ population represented in **Environmental Justice Figure 1**, **Figure 2**, and **Table 3**.

Staff concluded that the project would not have a significant cumulative contribution to the indicators of diesel PM, pesticide use, toxic releases from facilities, traffic density, asthma ER visits, low birth weight infants, or cardiovascular disease in the disadvantaged community census tracts of staff's focus.

COMPLIANCE WITH LORS

Staff has conducted a HRA for the proposed Stanton project and found no potentially significant adverse impacts for any receptors, including sensitive receptors. In arriving at this conclusion, staff notes that its analysis complies with all directives and guidelines from the Cal/EPA Office of Environmental Health Hazard Assessment and the California Air Resources Board. Staff's assessment is biased towards protection of public health and takes into account the most sensitive individuals in the population. Using extremely conservative (health-protective) exposure and toxicity assumptions, staff's analysis demonstrates that members of the public potentially exposed to toxic air contaminant emissions of this project, including sensitive receptors such as the elderly, infants, and people with pre-existing medical conditions, would not experience any acute or chronic significant health risk or any significant cancer risk as a result of that exposure. Please see **Public Health Table 1** for details.

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.

RESPONSE TO COMMENTS ON THE PRELIMANARY STAFF ASSESSMENT (PSA)

Staff has received no public or agency comments on the **Public Health** section of the proposed Stanton project.

CONCLUSIONS

Staff has analyzed the potential public health risks associated with construction and operation of the Stanton 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 air emissions. Exposure to off-site nonresident workers or recreational users would be lower with correspondingly lower health risks. According to the results of staff's HRA, both construction 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.

Staff concludes that Stanton's public health impacts would be less than significant and would not contribute to disproportionate impacts to the EJ population.

PROPOSED CONDITIONS OF CERTIFICATION

No public health conditions of certification are proposed by staff.

ACRONYMS

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
SCAQMD	South Coast Air Quality Management District
SERC	Stanton Energy Reliability Center
SIDS	Sudden Infant Death Syndrome
Stanton	Stanton Energy Reliability Center

SO2	Sulfur Dioxide
SO3	Sulfate
SOx	Oxides of Sulfur
SRP	Scientific Review Panel
TACs	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TDS	Total Dissolved Solids
tpy	Tons per Year
VOCs	Volatile Organic Compounds

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SOCIOECONOMICS

Testimony of Ellen LeFevre

SUMMARY OF CONCLUSIONS

Energy Commission staff (staff) concludes that construction and operation of the Stanton Energy Reliability Center (Stanton 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. Stanton also would not negatively impact acceptable service ratios of the project area's law enforcement services, parks and recreation facilities, 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) and resources (parks and recreation)
- law enforcement services
- schools
- estimated beneficial economic effects

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Socioeconomics Table 1 contains socioeconomics (LORS) applicable to the proposed project.

Socioeconomic Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
Local	
Magnolia ESD Board Policy BP 7211 Facilities: Developer Fees	In order to finance the construction or reconstruction of school facilities needed to accommodate students coming from new development, the Governing Board may establish, levy and collect developer fees on residential, commercial and industrial construction within the district, subject to restrictions specified by law and administrative regulation.

SETTING

The proposed project is located in the city of Stanton in Orange County at 10711 Dale Avenue. The proposed project is a 98-megawatt hybrid electrical generating and storage facility.

PROJECT STUDY AREAS

The following are the study areas for socioeconomic-related project impacts:

- population and housing-
  - Orange County and the cities of Anaheim, Buena Park, Cypress, Garden Grove, Hawaiian Gardens, La Palma, Los Alamitos, Stanton, and Westminster.
- public services[1], including law enforcement, and parks and recreation facilities
  - city of Stanton
- schools
  - Magnolia Elementary School District and Anaheim Union High School District
- regional workforce, sales tax, and indirect and induced economic project effects (including IMPLAN[2] modeling)
  - Orange County
- EJ impacts within a six-mile radius of the project site

[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.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

The California Environmental Quality Act (CEQA) requires a list of criteria to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (CEQA Guidelines section 15382).

Thresholds serve as the benchmark for determining if a project will result in a significant adverse impact when evaluated against existing conditions (e.g., "baseline" conditions). State CEQA Guidelines, codified in California Code of Regulations section 15064(e), specify:

> *"Economic and social changes resulting from the project shall not be treated as significant effects on the environment."*
>
> *"Where a physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project. Alternatively, economic and social effects of a physical change may be used to determine that the physical change is a significant effect on the environment. If the physical change causes adverse economic or social effects on people, those adverse effects may be used as a factor in determining whether the physical change is significant."*

Staff has used Appendix G of the CEQA Guidelines for this analysis, which specifies that a project could have a significant 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.

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.
    - o Anaheim-Santa Ana-Irvine Metropolitan Division (MD)[3] (Orange 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 2 shows the historical and projected populations for the cities and communities within proximity of the project site, plus Orange County. Population projections between 2010 and 2035 show a growth ranging from less than one to 22 percent or 0.01 to 0.87 percent per year in the cities within and around the six-mile radius.

Socioeconomics Table 2
Projected Populations

Area	2010[1]	2020[2]	2035[2]	Projected Population Change 2010-2035		
				Number	Percent (%)	Percent per Year (%)
Anaheim	336,265	369,100	405,800	69,535	20.68	0.83
Buena Park	80,530	83,500	83,200	2,670	3.32	0.13
Cypress	47,802	50,300	51,400	3,598	7.53	0.30
Garden Grove	170,883	179,400	180,300	9,417	5.51	0.22
Hawaiian Gardens	14,254	14,800	15,600	1,346	9.44	0.38
La Palma	15,568	15,600	15,600	32	0.21	0.01
Los Alamitos	11,449	12,000	12,000	551	4.81	0.19
Stanton	38,186	40,800	43,400	5,214	12.01	0.80
Westminster	89,701	92,900	92,600	2,899	3.13	0.13
Orange County	3,010,232	3,266,000[2] 3,260,659[3]	3,421,000[2] 3,504,411[3]	494,179*	14.10	0.56

Notes: * Calculated using the highest 2035 population projection. **Sources:** [1]US Census 2010, [2]SCAG 2012, [3]CA DOF 2017.

[3]Metropolitan Division (MD) is a subdivision of a Metropolitan Statistical Area (MSA) forming a smaller grouping of counties that contains a single core population of 2.5 million or more. Data at the MD level maintain the same geographic configuration as the MSA.

Socioeconomics Table 3 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.

Socioeconomics Table 3
Total Craft Labor by Skill in the Study Area MD versus Project Construction Labor Needs

	Anaheim-Santa Ana-Irvine MD (Orange County)				Project Labor Needs (Plant and Linears)
	Total Workforce (2014)	Total Projected Workforce (2024)	Growth from 2014		Peak Construction Period (June 2019, Month 8)
			Number	Percent	
Surveyor	590	600	10	1.7	2
Operator[1]	2,000	2,380	380	19.0	2 (4)
Laborer[2]	13,020	16,450	3,430	26.3	16
Truck Driver[3]	4,000	4,570	570	14.3	3
Carpenter	12,460	15,680	3,220	25.8	8 (12)
Paving Crew[4]	440	510	70	15.9	0 (2)
Pipefitter	3,800	4,920	1,120	29.5	6
Electrician	6,510	8,780	2,270	34.9	6
Cement Finisher[5]	2,440	3,000	560	23.0	2
Ironworker[6]	450	510	60	13.3	2 (4)
Tradesman[7]	65,360	84,530	19,170	29.3	8
Project Manager[8]	-	-	-	-	1
Construction Manager	5,620	6,680	1,060	18.9	1
Project Manager Assistant	-	-	-	-	1
Engineer	23,490	26,260	2,770	11.8	2
Gen-Tie	-	-	-	-	6
Gas Pipeline	-	-	-	-	12
Total Construction Staff (Plant and Linears)	140,180	174,870	34,690	24.7	78

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] Operating Engineers and Other Construction Equipment Operators; [2] Construction laborer; [3] Industrial Truck and Tractor Operators; [4] Paving, Surfacing, and Tamping Equipment Operators; [5] Cement Masons and Concrete Finishers; [6] Structural Iron and Steel Workers; [7] Construction Trades Worker . **Sources:** SERC 2016a Table 5.10-8, pgs. 5.10-11 – 5.10-12 and CA EDD 2016.

The applicant expects project construction to last 12 months, from November 2018 to October 2019 (SERC 2016a, pg. 5.10-11). Completion of the electric interconnection facilities by Southern California Edison is anticipated to require an additional two months (CEC 2018f). The project's construction workforce would average 48 workers over the 12-month period and reach a peak of 78 workers in month 8 (June 2019) (SERC 2016a, pg. 5.10-11). The workforce needed during the project's peak construction workforce month is presented in **Socioeconomics Table 3**. 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 Orange County and thus would be considered local workforce, commuting daily to the project site (SERC 2016a, pg. 5.10-13). 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 38 local and 10 non-local workers. During peak construction there would be approximately 62 local and 16 non-local workers.

Stanton would not be locally staffed on a daily basis. The project would be remotely monitored and/or operated on a continuous basis from the control/operations center in Sacramento. The remote operations desk would be staffed by a combination of full-time and part-time staff consisting of an offsite remote operator, an onsite technician, or a combination of the two. No new hiring of remote operations staff is expected.

Operations and maintenance (O&M) technicians would be dispatched to the project site for routine onsite maintenance as needed. Their primary responsibility would be to conduct facility maintenance and to receive goods and materials for the facility (e.g. oversee proper offloading of aqueous ammonia). Although O&M technicians would locally control the units following maintenance tasks or during test runs, typical operations would be performed remotely. It is anticipated that O&M technicians would be at the facility one to three days each week. Stanton would engage Wellhead Services, Inc. (WSI) for local operation and maintenance of the facility. Stanton anticipates that WSI may add one to two additional technicians in order to establish optimal staffing levels once the project becomes operational. (SERC 2017b)

Staff has consulted with Los Angeles / Orange Counties Building and Construction Trades Council on several projects similar to Stanton and found there is a sufficient labor supply within the region and thus within commuting distance to the project. The California Employment Development Department labor data for the region shows the large labor pool. Additionally, 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 project.

The applicant assumes that no operations staff would be hired for Stanton, therefore no new residents would be added and the project 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

Socioeconomics Table 4 presents housing supply data for the project area**.** The cities within a six-mile radius of the project site have a vacancy rate that ranges from 1.8 percent to 4.4 percent. A five percent vacancy is a largely industry-accepted minimum benchmark for a sufficient amount of housing available for occupancy (Virginia Tech 2006). Although the project area has limited housing supply, the project would not hire permanent operations workers and thus would not have an impact on the existing housing supply.

Socioeconomics Table 4
Housing Supply Estimates in the Project Area

Housing Supply		2017	
		Total	Vacant
Anaheim	Number	107,557	4,753
	Percent	100	4.4
Buena Park	Number	24,994	799
	Percent	100	3.2
Cypress	Number	16,244	298
	Percent	100	1.8
Garden Grove	Number	47,789	1211
	Percent	100	2.5
Hawaiian Gardens	Number	3,711	89
	Percent	100	2.4
La Palma	Number	5,230	117
	Percent	100	2.2
Los Alamitos	Number	4,390	154
	Percent	100	3.5
Stanton	Number	11,283	365
	Percent	100	3.2
Westminster	Number	27,856	1,104
	Percent	100	4.0
Unincorporated Orange County	Number	40,799	1,492
	Percent	100	3.7
Orange County	Number	1,083,563	53,399
	Percent	100	4.9
Source: CA DOF 2017a			

Orange County has 507 hotels and 58,723 rooms with an average occupancy rate of 80.6 percent for 2016 (Visit Anaheim 2017). There are approximately 350 recreational vehicle (RV) and campground spaces spread throughout four RV/campground parks within the study area. (RV Parking 2014, Good Sam's Club 2017). Two of the RV/campground parks allow extended stay.

During construction, there would be approximately 16 non-local workers during peak construction and an average of 10 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.

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 Orange County, and therefore the project would create a less than significant impact under this criterion.

Displace Substantial Numbers of Existing Housing and People

The proposed site is partly paved and used for vehicle storage and partly consists of disturbed area that is currently vacant (SERC 2016a pg 1-11). 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, Stanton would not negatively impact service ratios, response times, or other performance objectives relating to law enforcement, parks and recreation facilities, or schools.

Law Enforcement

The proposed project site is located within the jurisdiction of the Orange County Sheriff's Department (OCSD), Stanton Sheriff's station in the city of Stanton. The Stanton Sheriff Station is located at 11100 Cedar Street, a distance of approximately one mile from the project site. The estimated response time for priority calls (emergency) is approximately four minutes and the estimated response time for non-priority calls (non-emergency) is approximately 10 minutes (CEC 2017i).

Energy Commission staff contacted OCSD 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 three conditions of certification typically applied to projects like Stanton to address construction and operations site security and traffic management. One of the example Conditions of Certification, **HAZ-8**, did not reflect that Stanton would be an unmanned facility. Hazardous Materials Management staff has proposed revisions to **HAZ-8** to reflect the security measures planned for the project.

OCSD Lieutenant Sean Howell reviewed the revised Condition of Certification **HAZ-8** and believes that the Sheriff's Department can adequately respond to calls for law enforcement without the need for additional facilities or personnel. Lt. Howell recommended for the construction phase, that a security guard be present during off hours to minimize calls relating to vandalism. Hazardous Materials Management staff considers the security plan required in **HAZ-7** would be adequate to deter vandalism.

Stanton would prepare a security plan which would include descriptions of site fencing and security gate, 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, a protocol for hazardous materials vendors to prepare and implement security plans and to ensure that all hazardous materials drivers have a personnel background security check. The plan would also include a demonstration that the perimeter security measures would be adequate. The demonstration may include one or more of the following: security alarms for critical structures, perimeter breach detectors and onsite motion detectors, and video or still camera monitoring system (SERC 2016a, pg. 5.5-17).

Hazardous Materials Management staff is proposing Conditions of Certification **HAZ-7** and **HAZ-8**, requiring the preparation of a site security plan to provide for security during all phases of the project.

Based on the information from Lieutenant Howell, 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 response times for law enforcement services; therefore, no associated physical impact 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 Westminster (CHP 2017). The **Hazardous Materials Management** section of this document discusses response times for hazardous material spill incidents.

Parks and Recreation Facilities

The city of Stanton has two recreation centers, six parks, and one sports facility. Amenities offered at these parks include playgrounds, picnic tables, sports fields (soccer, basketball, and softball), tennis courts, and water play areas. The closest park to the project is Hollenbeck Park, located less than half a mile from the project site.

The city has a park standard of 0.94 acre per 1,000 residents (Stanton 2008). The 2012-2016 ACS Five-Year Estimates shows the estimated population in the city of Stanton as 38,594[4] (US Census 2016). Based on this current estimate, approximately 36.3 acres of local parks/facilities would be needed to meet the parks and recreation facilities standards. There are approximately 37.11 acres of parks and facilities in the city of Stanton (Stanton 2017). The city of Stanton currently meets their park standard.

Staff's analysis shows there would not be a large number of workers moving into the project area during project construction and no workers moving to the project area for project operations. Non-local construction workers tend not to visit parks and recreation facilities or bring their families with them when working on a job. 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 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.

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 Senate Bill 50 (Leroy F. Greene School Facilities Act of 1998) excuse in a CEQA document 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).

[4] The five-year ACS estimate for population in the city of Stanton is 38,594, with a margin of error of +/- 50, and a coefficient of variation of 0.08.

The project is in the Magnolia Elementary School District (Magnolia ESD) and Anaheim Union High School District (Anaheim UHSD). Magnolia ESD 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 fees are assessed on the area of covered and enclosed space and are calculated prior to the issuance of building permits during plan review.

The current school impact fee for Magnolia ESD is $0.28 per square foot of new covered and enclosed commercial/industrial space and the current school impact fee for Anaheim UHSD is $0.27 per square foot of new covered and enclosed commercial/industrial space (Magnolia 2016, CEC 2017j). Based on the preliminary project design, approximately 2,190 square feet of occupied structures (warehouse building) would be constructed (SERC 2018e). Approximately $613.20 in school fees would be assessed for Magnolia ESD and $591.30 for Anaheim UHSD for a combined total of $1,204.50.

Section 17620 of the Education Code requires the city of Stanton to ensure payment of school impact fees prior to issuance of building permits for any construction. For the Stanton project, payment assurance of school impact fees to the school districts is subsumed in the Energy Commission certification process because of the Energy Commission's exclusive permitting authority over thermal power plants. Therefore, staff is proposing Condition of Certification **SOCIO-1** to ensure the assessment and payment of school impact fees consistent with local practices. With the one-time payment of statutory school impact fees, Stanton would comply with Section 17620 of the Education Code and the Magnolia Elementary School District Board Policy BP 7211 Facilities: Developer Fees.

Stanton 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. The applicant anticipates that no operations staff would be hired for the project and therefore, no additional students would be added to the school districts. Also, as previously discussed under the "Induce Substantial Population Growth" subsection, Orange County has a large supply of workers to meet the needs for Stanton.

For the above stated reasons, the 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 probable 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 Stanton Energy Reliability Center Master Cumulative Project List for projects that would employ a similar workforce to Stanton and have overlapping construction schedules and projects that could supply housing non-local construction workers. In assessing the project's direct impacts, staff assumed about 20 percent of the Stanton 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 Stanton is approved, the project's 12-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	PPD 766	Five-story mixed use development including outpatient clinic, assisted living facility and restaurant	12282 Beach Blvd., Stanton	Building Plan Check
23	Hotel Stanford	Ten-story hotel with 150 guest rooms, conference and banquet space and rooftop bar.	7860 Beach Blvd., Buena Park	Approved May 2016
24	Fairmont Private School, DEV2014-00138	Construct a 4-story student dormitory building on the existing Fairmont private school campus	2200 W Sequoia Ave., Anaheim	Approved
25	SP-022-2016, LLA-011-2016, DA-002-2016, CUP-065-2016	Site Plan and Conditional Use approval to construct a four-story, 10-unit, work-live mixed-use development on three separate properties in conjunction with a Lot Line Adjustment to consolidate three properties into one. A Development Agreement is also included.	10641 Garden Grove Blvd., 10661 Garden Grove Blvd., and 10662 Pearl St., Garden Grove	Entitlements granted
31	Anaheim Plaza, DEV2015-00120	580-room, 8-story hotel with 50,000 sq. ft. meeting space; 25,600 sq. ft. restaurant space; 20,188 sq. ft. concierge lounge space; fewer parking spaces than required by the zoning code; and request to adopt development agreement between the city of Anaheim and Good Hope International for proposed hotel project.	1700 S Harbor Blvd., Anaheim	Approved
36	Cambria Hotel and Suites, DEV2016-00038	Final site plan to construct 12-story, 352-room hotel, three restaurant tenant spaces and one-level of subterranean parking.	1721 S Manchester Ave., Anaheim	Approved
37	Hampton Inn and Suites	Four-story hotel with 102 rooms, pool, spa, meeting room, and fitness area.	7307 Artesia Blvd., Buena Park	Under construction
38	Buena Park Nabisco Mixed Use Project	149 residential condo/townhomes, 100-room 4 - story hotel, and auto dealership.	Northwest corner of Artesia Blvd. and Rostrada Ave., Buena Park	Townhome construction completion estimated December 2017. Hotel construction completion Fall 2015. Although there is no proposal for development on an auto dealership, construction is estimated

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
				construction in 2017 with opening in 2018.
39	OnBeach Mixed Use Development	Five-story mixed-use development on approximately 2.31-acre former Anaheim General Hospital site. Includes approx. 48,000 sq. ft. medical office, restaurant, and retail uses as well as 60 senior apartments.	5742 Beach Blvd., Buena Park	Under construction
45	Anaheim Sustainability Center	Organic waste-to-energy facility to convert organic waste to biogas. Biogas used to generate renewable electricity for onsite needs and for sale to utility companies, including Anaheim Public Utilities. At buildout, facility would include two anaerobic digester tanks; an administration building; a receiving/processing building with loading bays; an outdoor power generation apparatus; and 15 passenger vehicle parking spaces. Capacity to generate up to 4.5 megawatts (MW) of renewable energy in Phase 1 and up to a total of 9.0 MW in Phase 2.	1300 and 1322 N. Lakeview Ave., Anaheim	MND July 2016
n/a	Prestressed Concrete Cylinder Pipe Rehabilitation Program	Rehab prestressed concrete cylinder pipe portions of five subsurface water distribution pipelines nearing end of service life. The second lower feeder is closest to the city of Stanton. Rehab methods include steel cylinder relining with collapsed pipe, steel pipe slip-lining with non-collapsed pipe, and replacement or new pipe construction. Maintenance and replacement of worn or outdated appurtenant structures (e.g. above-ground air release valves, vacuum valves, manholes, and buried vault structures) to be completed. Individual projects in Metropolitan owned rights-of-way, public roads and open space. Possible acquisition of additional temporary right of way to facilitate construction.	Second Lower Feeder- Rolling Hills, Lomita, Torrance, Los Angeles, Carson, Long Beach, Los Alamitos, Cypress, Buena Park, Anaheim, Placentia, Yorba Linda.	Second Lower Feeder (1 route out of three routes in Metropolitan Water District of Southern California region) constructed over 10-12 year period and broken up into 10 groups with construction of each group between each October to June. Construction of 1st group Oct. 2017 to June 2018, 2nd group Oct. 2018 to June 2019, and so on. Section of feeder between Interstate 605 and Interstate 5 broken into two groups, with construction estimated Oct. 2023 to June 2024 and Oct 2024 to June

ID #	PROJECT NAME	DESCRIPTION	LOCATION	STATUS
				2025. Construction may be delayed if surveys of the other routes yield pipe requiring repair before other pipe in the second lower feeder route.
n/a	Rehabilitation of Western Regional Sewers, Project No. 3-64	Rehab and/or replace entire lengths of Orange Western Sub-Trunk, Los Alamitos Sub-trunk, Westside Relief Interceptor, and Seal Beach Blvd interceptor. Complete replacement of the Westside Pump Station wet well and replacement or rehabilitation of existing force main and odor control facilities.	Route along Los Alamitos Blvd., Denni St., and Bloomfield St. Route along Los Alamitos Blvd., Denni St., and Moody St. Route along Orange Ave. and Western Ave. Cities of Cypress, La Palma, Los Alamitos, and Seal Beach and the community of Rossmoore.	Construction Oct. 2019 to June 2026.
n/a	Eastbound State Route 22 Safety Improvement Project	Convert collector-distributor road to freeway to freeway direct connector for Interstate 5 (I-5) southbound. Create new freeway to freeway connector from State Route 22 (SR) eastbound to I-5/SR-57 northbound by re-striping and widening connector to add one additional lane. Access to SR-22 eastbound from Bristol St. on ramp eliminated to accommodate I-5/SR-57 northbound connector. Install new and upgrade existing traffic control devices. Existing high occupancy vehicle lane with continuous access maintained. New changeable message sign installed east of SR-39.	East of Garden Grove Ave. to Devon Rd., cities of Orange, Santa Ana, and Garden Grove	

The socioeconomic impacts of the project are primarily driven by its construction workforce needs. Stanton would employ an average of 48 workers per month during construction and would peak during month 8 (June 2019) with 78 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 10 workers, peak 16) 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, no permanent operational staff would be hired. Stanton would be remotely monitored and/or operated on a continuous basis and technicians would be contracted to provide onsite routine maintenance as needed.

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 Stanton 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 Anaheim-Santa Ana-Irvine MD (Orange County).

Socioeconomics Table 6
Table Labor Supply for the Local Study Area

Total Labor (Construction Workforce)*	Total Workforce for 2014	Total Projected Workforce for 2024	Growth from 2014	Percent Growth from 2014 (%)
Anaheim-Santa Ana-Irvine MD (Orange County)	140,180	174,870	34,690	24.7

Notes: Total workforce includes only the crafts specifically needed for Stanton. *See **Socioeconomics Table 3** for list of crafts included in the total construction workforce figures. **Source:** CA EDD 2016.

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 the projects identified in **Socioeconomics Table 5**, including Stanton.

As shown in **Socioeconomics Table 5**, there are five hotels with approximately 1,284 rooms in the cities of Anaheim and Buena Park currently under construction. This added housing would supplement the many lodging options already available in Orange County – the 58,723 rooms forecasted for 2017 with an occupancy rate of 80.6 percent and over 350 RV and campground spaces spread throughout four RV/campground parks within the study area.

The construction workers needed for the project, 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 Stanton would not contribute to a cumulative impact on the housing supply. The project would be remotely monitored and/or operated on a continuous basis; therefore, no permanent operational staff would be hired. The project would not have an incremental impact due to a permanent influx of workers.

Energy Commission staff's communication with the Orange County Sheriff's Department confirmed the station is not overextended for this project. 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, Stanton 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. Since no permanent operational staff would be hired, no operations workers would move into Orange County. Therefore, the project would not have an incremental impact on neighborhood or regional parks or other facilities.

Since no operations workers would be moving into Orange County, there would 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 Stanton 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 Stanton to make a cumulatively considerable contribution to any significant cumulative impacts related to population, housing, law enforcement, parks and recreation facilities, or schools.

COMPLIANCE WITH LORS

With the proposed Condition of Certification **SOCIO-1**, Stanton would comply with all socioeconomic related laws, ordinances, and regulations (LORS). **Socioeconomics Table 7** summarizes the project's compliance with applicable LORS pertaining to socioeconomics.

Socioeconomics Table 7
Project Compliance with Adopted Socioeconomics LORS

Applicable LORS	Description	Stanton Consistency
State		
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.	**Consistent.** **SOCIO-1** requires the project owner to pay school impact fees to the Magnolia Elementary School District and Anaheim Union High School District.
Local		
Magnolia Elementary School District Board Policy BP 7211 Facilities: Developer Fees	In order to finance the construction or reconstruction of school facilities needed to accommodate students coming from new development, the Governing Board may establish, levy and collect developer fees on residential, commercial and industrial construction within the district, subject to restrictions specified by law and administrative regulation.	**Consistent.** **SOCIO-1** requires the project owner to pay school impact fees to the Magnolia Elementary School District.

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 population receiving free or reduced price meals in the Westminster, Centralia Elementary, Magnolia Elementary, Savanna Elementary, Garden Grove Unified, and Anaheim Elementary school districts constitute an EJ population based on a low income population. The study area used in this analysis for impacts related to population influx, housing supply, and schools includes the cities of Anaheim, Buena Park, Cypress, Garden Grove, Hawaiian Gardens, La Palma, Los Alamitos, Stanton, and Westminster. The city of Stanton is the study area used for impacts related to law enforcement and parks and recreation facilities. Therefore, staff further considered the project's socioeconomic impacts on the EJ population living in these geographic areas.

The potential for socioeconomic impacts is predominantly driven by the temporary influx of non-local construction workers seeking lodging closer to the project site. For Stanton, the few construction workers seeking lodging in the project area during construction would have a negligible effect on the housing supply and the project would not negatively impact service ratios, response times, or other performance objectives relating to law enforcement, parks and recreation facilities, or schools. As the project would be remotely monitored and operated on a daily basis, no hiring of operations staff is expected. The applicant would contract technicians to provide onsite routine maintenance as needed. There would be no reduction to the housing supply or impact on local public services during operations.

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, requiring 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 the project would not displace any residents or remove any housing, it would pose no disproportionate impact to EJ populations.

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 the project.

The assessment used Orange 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 8 reports the applicant's estimates of the economic impacts/benefits that would accrue to Orange County due to project construction and operation.

Socioeconomics Table 8
Stanton Economic Benefits (2016 dollars)

TOTAL FISCAL BENEFITS[1]	
Estimated annual property taxes	$1.665 million
State and local sales taxes:	
Construction	Based on $2.35 million in local expenditures
	$211,500 total, $58,750 local
Operation	Based on $1.46 million
	$131,400 total
School Impact Fees	Estimated total: $1204.50
	$613.20 for Magnolia Elementary School District
	$591.30 for Anaheim Union High School District
TOTAL NON-FISCAL BENEFITS	
Total capital costs	$150 million
Construction payroll (incl. benefits)	$12.4 million
Operations and maintenance budget	$1.46 million annually
Construction materials and supplies	$112 million
TOTAL DIRECT, INDIRECT, AND INDUCED BENEFITS	
Estimated Direct Benefits	
Construction Jobs	48 (average), 78 (peak)
Operation Jobs	0[2]
Estimated Indirect Benefits	
Construction Jobs	8
Construction Income	$507,700
Operation Jobs	2
Operation Income	$329,550
Estimated Induced Benefits	
Construction Jobs	74
Construction Income	$4,778,700
Operation Jobs	2
Operation Income	$174,120

Notes: [1] Based on applicant's estimates.[2] Applicant will contract technicians to provide onsite routine maintenance as needed. **Source:** SERC 2016a pg. 5.10-13 - 5.10-16, SERC 2018e

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. Stanton would be a nominal 98- MW natural gas-fired EGT plant with integrated batteries for hybrid operation. Therefore, BOE is responsible for assessing property value. The property tax rate is set by the Orange County Auditor-Controller's office. Property taxes are collected and distributed at the county level.

Construction of the power plant would add approximately $150 million (capital cost) and with a property tax rate consistent with the current rate (fiscal year 2016-2017) for the existing project site (1.10046 percent), the project would generate approximately $1.65 million in property taxes during the first operation year of the project (OCTTC 2017). The revenue collected from property taxes is distributed among school districts, special districts, redevelopment trust funds, unincorporated areas, and incorporated areas (cities) by Orange County. The remaining property tax generated above 1 percent (0.10046 percent) is distributed in whole to the city.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

The only comment on the Socioeconomics section of the Preliminary Staff Assessment (PSA) was from the Committee (TN 223300, docketed on 4/30/2018). In regard to the duration of construction, the Committee noted that "[t]here are some inconsistencies about the duration of the construction phase of the SERC [project]. Some sections of the PSA state the construction phase would last 14 months (Project Description, p. 3-11; Noise and Vibration, pp. 4.7-6 and 4.7-8; Traffic and Transportation, p. 4.11-6). Other sections state that the construction period is 12 months (Project Description, p. 3-11; Air Quality, p. 4.1-16; Biological Resources p. 4.2-29; Socioeconomics, p. 4.9-5; and Waste Management, p. 4.14-12). Public Health states the construction phase would last 11 months (p.4.8-13 and 4.8-14). Please clarify or explain the differences in construction estimates."

Staff revised page 4.9-5 to incorporate the applicant's clarification of the construction duration, which was provided in TN 223446 (docketed on 5/15/2018).

CONCLUSIONS

Staff concludes the project 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 Magnolia Elementary School District and to the Anaheim Union High School District as authorized by Education Code Section 17620 and the Magnolia Elementary 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 delegate chief building official (DCBO) has calculated the assessable covered and enclosed space consistent with local practices and shall provide proof of payment of the development fees, based on the calculated space and current school development fees, to the Magnolia Elementary School District and to the Anaheim Union High School District.

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SOIL AND WATER RESOURCES

Testimony of Abdel-Karim Abulaban, Ph.D, PE, and Mike Conway, PG, CHG

SUMMARY OF CONCLUSIONS

The proposed Stanton Energy Reliability Center (Stanton) could potentially impact soil and water resources. Staff evaluated the potential for the project to: cause accelerated water erosion and sedimentation; exacerbate flood conditions in the vicinity of the project; adversely affect surface or groundwater supplies; or degrade surface or groundwater quality. Staff further evaluated if the proposed project would comply with all applicable laws, ordinances, regulations, standards (LORS), and state policies.

The applicant provided revised project drainage, water quality management, and grading plans following the publication of the Preliminary Staff Assessment (PSA). The description of the revisions is provided in references SERC 2108e, f, h, k, and m.

Based on the analysis of the information above and what was provided in the Application for Certification (AFC), staff concludes as follows:

1. Condition of Certification **SOIL&WATER-1** would reduce or avoid impacts of soil erosion and storm water runoff to surface water and groundwater quality during construction.

2. Post-construction storm water control best management practices (BMPs) would reduce storm water runoff impacts during operations to less than significant by compliance with Condition of Certification **SOIL&WATER-2**.

3. Potential impacts of Stanton's wastewater streams would be mitigated to less than significant during construction through compliance with Condition of Certification **SOIL&WATER-2** (to manage storm water runoff), **SOIL&WATER-3** (to manage hydrostatic testing and/or construction dewatering) and during operations with Condition of Certification **SOIL&WATER-6** (to manage sanitary waste).

4. Compliance with Conditions of Certification **SOIL&WATER-4** and **SOIL&WATER-5** would ensure the project owner complies with the water use limits consistent with this analysis.

5. During project operation, wastewater generated by the project would be discharged to the city of Stanton's sewer system. Condition of Certification **SOIL&WATER-6** requires documentation from the applicant demonstrating the city of Stanton's fees associated with sewer connections have been paid and they have complied with the requirements of the applicable ordinances.

6. Prior to project construction the project owner would be required to submit a Frac-Out Plan detailing how jack and bore activities would be conducted to ensure no significant impacts to Carbon Creek. Condition of Certification **SOIL&WATER-7** requires documentation of applicable permits and the preparation of a Frac-Out Plan.

7. Prior to project construction the project owner would be required to obtain an encroachment permit for the construction of a vehicle and a utility bridge. Condition of Certification **SOIL&WATER-8** requires the applicant to comply with Orange County Public Works Department requirements and obtain a Flood Control Encroachment Permit.

8. A Water Supply Assessment (WSA) is not required for Stanton because it is not a "Project" as defined by California Water Code Section 10912.

9. The likelihood of flooding at the site is low. The consequence of flooding onsite is also expected to be low.

10. Stanton'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 soil or water resources environmental justice issues resulting from the proposed project. No environmental justice populations would be significantly, adversely, or disproportionately impacted.

12. Stanton would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

Staff further concludes that the project would not result in significant adverse impacts that cannot be avoided or mitigated and would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

INTRODUCTION

On October 26, 2016, Stanton Energy Reliability Center, LLC (applicant) filed an application for certification (AFC) to construct and operate the 98-megawatt (MW) Stanton. This Final Staff Assessment (FSA) analyzes potential impacts on soil and water resources that could result from the construction and operation of Stanton.

METHODOLOGY FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Significance criteria are based on those listed in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Soil and water resources impacts would be significant if the project would:

- violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

  - result in substantial erosion or siltation on- or off-site;
  - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
  - create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or
  - impede or redirect flood flows;
- adversely impact open space used for production of resources by, among other things:
  - substantially impeding groundwater recharge;
  - causing substantial soil erosion or the loss of topsoil;
  - reducing areas needed for the protection of water quality and water supply , such as wellhead protection areas and wetlands;
- 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 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 conclusion regarding significance is the project's compliance with federal, state, and local LORS, as further described below.

As part of the 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 appropriate management of both soil and water resources. A major component of staff's conclusion 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.

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 a water quality certification from the regional water quality control board when a Section 404 permit is requested of the US Army Corps of Engineers (USACE) for dredge or fill activity in waters of the US. 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. CWA section 404: Requires a permit from the USACE for dredge or fill activity in waters of the US. CWA section 408: Requires a permit from the USACE to ensure that any proposed alteration to a USACE civil works project will not be injurious to the public interest and will not affect the project's ability to meet its authorized purpose.	Yes, with implementation of Conditions of Certification **SOIL&WATER-1**, **-3, and -7.**
State		
California Constitution, article X, section 2	Requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use, or unreasonable method of use is prohibited.	Yes, the project minimizes water use. The project also does not have reasonable access to recycled water.
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.	Yes, with implementation of Conditions of Certification **SOIL&WATER-1** and **-3**. The project also does not have reasonable access to recycled water.

Applicable LORS	Description	Project Compliance
	Section 13550: Requires the use of recycled water for non-potable uses subject to recycled water being available and upon other criteria such as the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.	
California Water Code, sections 10910 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.
Fish and Game Code, section 1602	Fish and Game Code section 1602 requires an entity to obtain a permit from California Department of Fish and Wildlife (CDFW) prior to commencing any activity that may: • Substantially divert or obstruct the natural flow of any river, stream or lake; • Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or • Deposit debris, waste or other materials that could pass into any river, stream or lake.	Yes, with implementation of Condition of Certification **SOIL&WATER-7**.
Local		
Orange County Code – Titles 4, Division 13 and Title 9, Division 1 – Stormwater Management and Urban Runoff	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 **-2**.
Orange County Code – Title 9, Division 2, Article 2, Sections 9-2-40 and 9-2-50 – Flood Control Encroachment Permit	These County code sections outline the procedures and fees associated with the issuance of an encroachment permit for activities near flood control structures.	Yes, with implementation of Condition of Certification **SOIL&WATER-8**.
Orange County Sanitation District Ordinance No. OCSD-48	This ordinance specifies the fees that must be paid by entities receiving sanitary sewer service within the OCSD as well as the sewerage system design requirements.	Yes, with implementation of Condition of Certification **SOIL&WATER-6**.

PROJECT DESCRIPTION

The proposed Stanton project would be a 98-megawatt, natural gas power plant. The facility would make use of two General Electric LM6000 PC natural gas-fired combustion turbine generators, with integrated batteries for hybrid operation. The proposed project would require the installation of combustion turbines, installation of a battery array, and connection to the local natural gas, sanitary sewer, and municipal water supply.

FACILITY CONSTRUCTION

Construction and commissioning of Stanton is expected to occur over a 14-month period. The project site is currently partially paved and partially bare, undeveloped land with sparse vegetation. The site consists of approximately 3.978 acres and includes two parcels, Parcel 1 and Parcel 2. Parcel 1 is 1.764 acres and is east of the concrete Stanton Storm Channel that runs through the site. Parcel 2 is west of the Stanton Storm Channel, with an area of 2.214 acres. The AFC Project Description Figures 2.1-1a and 2.1-1b show the general site configuration. Parcel 2 is previously disturbed, and more than 60 percent of its area is paved and is currently occupied by a trucking company and a wooden pallet company. Temporary construction facilities would include a 2.89-acre area for worker parking at the Bethel Romanian Pentecostal Church, 350 feet south of the Stanton project site along Dale Avenue. A construction laydown area would be located on Parcel 2 which is mostly paved. Stanton plans to over-excavate the site to remove loose, unconsolidated soils and to remove existing asphalt concrete. Stanton would replace all excavated soils with crushed aggregates or concrete. The net balance is expected to be a fill of about 1,000 cubic yards (SERC 2018m).

The applicant also proposes construction of a 0.35-mile transmission line (Generator Tie-Line) that would run generally east from the project site to the Southern California Edison's (SCE) Barre Substation located northeast of the proposed project site. The transmission line would be constructed underground.

The gas line serving the project would be constructed in Dale Avenue extending 2.75 miles north to connect to existing service lines. The gas pipeline alignment would cross Carbon Creek. The applicant proposes using the jack and bore method to install the pipe beneath the creek.

WATER USE

The construction water supply would be potable water provided by Golden State Water Company via a connection adjacent to the project site within the existing Dale Avenue roadway corridor. Information submitted by the applicant in Data Response, Set 2 (SERC 2017i), indicates 5.6 acre-feet (AF) would be needed for construction. Water use would include equipment washdown, dust suppression, hydrostatic testing, and concrete mixing/curing (if needed).

Water use during project operation would average 13 acre-feet per year (AFY) and is not expected to exceed 34 AFY for sanitary and project operation uses. Golden State Water Company is the retail water provider for the area where the project would be located.

WASTEWATER MANAGEMENT

Wastewater generated during construction would include equipment wash-down water and storm water runoff.[1] Construction-related wastewater would be classified as hazardous or nonhazardous then managed according to appropriate LORS. The applicant provided more detailed information about wastewater handling in Data Response, Set 2 (SERC 2017i). The project would use portable toilets, where the wastewater would be collected and disposed of by a properly licensed entity. In addition, the applicant states that equipment wash water, if any, 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 discharge permit, which would be obtained before start of construction.

Storm Water Drainage and Quality Control

The storm water management for Stanton is divided into two phases, construction and operation. Prior to construction, the applicant would prepare a Storm Water Pollution Prevention Plan (SWPPP) that would describe methods to control soil erosion and sedimentation during construction of Stanton.

The built project site would be bisected by the Stanton Storm Channel, a concrete-lined drainage way that ultimately discharges to the Pacific Ocean. The project would require the removal of existing drainage pipes and the installation of a new drainage system. The existing property has two drain outlets, one from each parcel, discharging to the Stanton Storm Channel. The proposed project would utilize the same two drain outlet locations. The project is therefore not expected to require work in the Stanton Storm Channel for the drainage outlet points. The proposed storm water design would utilize underground perforated drain pipes and infiltration inlet chambers in Parcel 1 and only infiltration inlet chambers in Parcel 2.

The design follows the Orange County Hydrology Manual as well as the Orange County Model Water Quality Management Plan (Model WQMP) guidance. The guidance provided by these manuals ensures adequate conveyance and protection of water quality during the design storm water event.

Process Wastewater

Stanton's industrial wastewater would contain primarily Reverse Osmosis (RO) reject. Industrial wastewater from Stanton would be discharged to the sanitary sewer through an agreement with the city of Stanton. Occasionally, the combustion turbines at the Stanton project site would be washed with water. The rather small amount of wastewater from the occasional combustion turbine water washes would be collected in holding tanks (one for each combustion turbine generator) to be hauled away by a licensed waste hauler. Each auxiliary skid for the gas turbine packages would have weatherproof enclosures or rain shelters to prevent potential contamination of storm

[1] The Geotechnical Report submitted by the applicant also indicates that wastewater could include excavation dewatering (if dewatering is required) which would be disposed of in accordance with an appropriate permit issued by the RWQCB. Staff notes that the depth to groundwater at the site is approximately 20 feet, which would make the likelihood of dewatering very low.

water. As such, no collection of contaminated storm water would be needed. Wastewater (or other wastes) from occasional small leaks on skids within the enclosures would be retained on the skid to be tested for oil contamination. If it is determined to have oil contamination, it would be collected with rags and sorbents to be disposed of by a licensed disposal entity in accordance with applicable regulations.

Any equipment with oily residues at the Stanton project site would not be washed down, but would be cleaned with rags and sorbents with appropriate cleaning solutions. The oily rags and sorbents would then be properly stored for disposal by licensed disposal companies.

Sanitary Wastewater

During operation the Stanton facility would be unstaffed. However, the project would have a toilet onsite for the use of maintenance crews and other staff that would need to visit the project occasionally. Sanitary wastewater from the restroom facility on the west side of the project site would be discharged to the city's sanitary sewer system. The new sewer line would be located completely on SERC's Parcel 2 and within the city of Stanton Pacific Street right-of-way near the Fern Avenue intersection. Total sewer line length from the restroom location on Parcel 2 to the city of Stanton sanitary sewer line is approximately 140 feet. Construction sanitary wastewater would be collected in portable toilets (no discharge) supplied by a licensed contractor for collection and disposal at an appropriate receiving facility.

SETTING AND EXISTING CONDITIONS

The project would be built on approximately 4 acres of previously developed land located within the city of Stanton, in Orange County. The site was previously used for various light industrial activities (SERC 2016a).

SURFACE WATER FEATURES

The proposed project would be built within the boundaries of the 2,800 square mile Santa Ana River drainage basin. Drainage headwaters are in the San Bernardino and San Gabriel Mountains, east of the proposed project site (SERC 2016a).

The proposed project would discharge storm water to the Stanton Storm Channel. The Stanton Storm Channel drains to the Bolsa-Chica channels, which drain to Huntington Harbor and ultimately to the Pacific Ocean. The site drainage is separated from the Pacific Ocean by about 10 miles of man-made channels.

FLOODING

The site is located within a flood "Zone X," as designated by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (06059C0136J), dated December 3, 2009. The site is therefore in a zone described by FEMA as an area of "0.2% annual chance of flood." This zone is otherwise known as the 500-year flood zone, or above the 100-year flood zone.

GROUNDWATER

The Stanton project site is within the Coastal Plain of Orange County Groundwater Basin (Orange County Basin). The Orange County Basin lies along the coast and has a surface area of 350 square miles. The entire basin underlies the lower Santa Ana River watershed. The basin is not adjudicated and has a total capacity of approximately 38,000,000 AF. Groundwater in the Orange County Basin is managed by Orange County Water District (OCWD) using a model that determines potential effects of changes in pumping and recharge. OCWD monitors the water level in the basin using an extensive network of monitoring wells consisting of 521 wells in order to observe trends of groundwater levels and correlate them with pumping and recharge activities. OCWD also monitors the groundwater quality in the basin using a network of water quality monitoring wells consisting of 411 wells that are tested 2 to 20 times per year (SERC 2016a).

There are several municipal and irrigation wells throughout the basin with average yields of 4,000 to 6,000 gallons per minute (gpm). Average groundwater levels exhibited a decline of several feet by 1990, but they have risen by about 15 feet following that decline, according to the California Department of Water Resources (DWR) (SERC 2016a). Historical groundwater flow was generally toward the ocean in the southwest, but modern pumping has caused water levels to drop below sea level inland of the Newport-Inglewood fault zone. This trough-shaped depression causes sea water to migrate inland, contaminating the groundwater supply. Strategic lines of wells in the Alamitos and Talbert Gaps inject imported and reclaimed water to create a mound of water seaward of the pumping trough to protect the basin from seawater intrusion (SERC 2016a).

In general, the water quality of the subbasin is considered to be highly variable. Water within the basin is primarily of sodium-calcium bicarbonate character. Total dissolved solids range from 232 - 661 mg/L and average 475 mg/L. The average TDS content of 240 public supply wells is 507 mg/L with a range of 196 – 1,470 mg/L (SERC 2016a).

SOIL FEATURES

The site would be constructed in an area of extensive historical disturbance. Native soils may or may not be present in the upper soil profiles. The Natural Resources Conservation Service indicates the site is located completely within a zone of Hueneme fine sandy loam. This unit is described as an alluvial fan deposit occurring along the coastal plain. This underlying soil unit is also expected to be fairly well drained and relatively flat. It is also expected to be moderately susceptible to wind and water erosion (SERC 2016a).

The linear facilities are also expected to cross non-native fill and various loamy soil types. Though the transmission and gas lines would cross a couple soil types, they would be constructed within existing streets, on flat slopes (SERC 2016a).

SOIL CONTAMINATION

A Phase I Environmental Site Assessment (ESA) was conducted in September 2016 by a consultant on behalf of the applicant. The Phase I ESA found that an underground storage tank (UST) was removed from the western portion of the site and that residual petroleum hydrocarbon impacts reportedly remain in place beneath the former UST. The report stated that the removed UST is considered to be a historical recognized environmental condition in connection with the site.

In addition, the Phase I ESA report indicates that numerous containers of used oil and other chemical products were observed on the site. The report also stated that the soil and pavement at several spots where the oil and chemical containers were seen were stained. The report indicated that the chemical released from those containers were likely surficial in nature, and thus were not considered to be recognized environmental conditions. However, because the site is proposed for future development, including a building in its western area, the consultant who conducted the ESA recommended that the applicant consider a Phase II ESA to evaluate the potential vapor intrusion exposure pathways (in to the future building). The consultant also recommended that the project owner evaluate soil conditions in the western portion of the site for potential contaminants of concern relative to future construction and soil management activities. A Phase II ESA was conducted by the same consultant on behalf of the Stanton project concurrent with the Phase I ESA.

During the Phase II ESA, several soil samples were collected for analysis. The Phase II ESA indicated that the site was impacted by total petroleum hydrocarbon (TPH), which is commonly noted at commercial and light-industrial properties that have sustained similar historic uses as the Stanton project site. However, the report noted that TPH impacted soil at the site is not considered to be a significant constraint to future site development or a condition that that would result in a directive for assessment or remediation if brought to the attention of an environmental regulatory agency. The report also noted that no volatile organic compounds (VOC) were detected in the soil samples and that metal concentrations in the samples were not considered elevated. According to the provided ESAs there are no recognized environmental conditions at the site that could make it unsuitable for construction of the proposed project.

LOCAL WATER SUPPLY AND WASTEWATER SERVICE

The proposed project would use potable water supplied by Golden State Water Company via a connection adjacent to the project site within the existing Dale Avenue roadway corridor.

Wastewater from the project would be discharged to the city of Stanton’s sanitary sewer system, whose flow is ultimately received and treated by the Orange County Sanitation District (OCSD). OCSD sets and enforces wastewater quality limits in the project area. OCSD owns and operates two wastewater treatment plants with a total capacity of 187 million gallons per day (MGD). Most of the treated wastewater is released into the ocean via a 10-ft diameter offshore pipeline that extends five miles from shore to a point approximately 200 feet below the ocean surface. OCSD also sends about 130 MGD of treated wastewater to the OCWD which is then reclaimed and reused for landscaping, injected into the seawater intrusion barrier to protect groundwater, and for the

Groundwater Replenishment System (GWRS). The GWRS produces and injects recycled water which supplements native groundwater in the basin and frees up enough new water for nearly 850,000 residents in north and central Orange County. Since part of the potable water delivered by the Golden State Water Company is groundwater which mixes with injected recycled water in the basin, the Stanton facility would be indirectly using recycled water for operation.

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 Stanton. 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 adversely affected by offsite sedimentation, by runoff carrying contaminants, and by the discharge of pollutants. 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 also occur from discharge of wastewater or storm water runoff that has been in contact with toxic materials or surfaces. Contaminants and toxic substances can also attach to sediments and travel in sediment-laden runoff.

The construction of Stanton is expected to disturb approximately four acres which include the site footprint, along with the linear and substation construction elements. The proposed project is therefore subject to construction-related storm water permit requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES). 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 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 and Overhead Utility Projects (e.g. underground pipelines and overhead transmission lines). Prior to construction activity that would disturb one or more acres of land, an applicant

must demonstrate that it 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).

Staff agrees with the applicant's conclusion that proper implementation of a SWPPP and BMPs during construction would minimize impacts on water quality. Since Stanton's construction activities would be subject to storm water regulatory requirements and the applicant would comply with the Construction General Permit, the impacts of Stanton's construction on surface water quality would be less than significant.

Staff recommends Condition of Certification **SOIL&WATER-1**, which would require the applicant to comply with the requirements of the Construction General Permit by preparing a SWPPP. The project owner would also provide the compliance project manager (CPM) with copies of the SWPPP and any correspondence between the project owner and the SWRCB or the Santa Ana Regional Water Quality Control Board (SARWQCB) about compliance with the permit.

Linear Construction

For operation of the proposed Stanton project, water, sewer, and natural gas pipelines as well as underground transmission and communications cables would be required. The natural gas pipeline is expected to disturb 0.13 acres and the transmission equipment installation is expected to disturb 0.04 acres. Potential construction pollutants associated with these linear features are sediment from areas of soil disturbance, concrete and cement-related mortars, spilled oil, fuel, and fluids from vehicles and heavy equipment. With the exception of a portion of the natural gas pipeline, all other pipelines or underground cables would be constructed exclusively within city of Stanton streets, and potential impacts to soil and water resources would be mitigated through the preparation and implementation of the construction SWPPP.

Staff learned through Data Response A22 (SERC 2017b) that the north Dale Avenue natural gas pipeline would cross under Carbon Creek at the Dale Avenue crossing. The Stanton project proposes a jack and bore construction operation to drill under Carbon Creek to install a portion of the natural gas pipeline. Because the drilling process would employ the jack and bore process, unexpected and temporary impacts to water quality can occur as a result of drilling mud flowing through soil fractures to the surface and into Carbon Creek. To mitigate the potential of such an occurrence, staff recommends the preparation of a Frac-Out Plan prior to the commencement of the jack and bore operation. The plan would specify emergency and remedial actions to protect Carbon Creek in the event drilling mud is released to the creek or creek bed. The requirement for a Frac-Out Plan is included in Condition of Certification **SOIL&WATER-7**.

Any work that might affect an Army Corps of Engineers (ACOE) structure requires a section 408 permit. While the permit is issued by ACOE, in Orange County, applications for section 408 permits are processed through the Orange County Public Works Department. Because Carbon Creek is managed as an ACOE flood control structure, the applicant would need to obtain a section 408 permit for the jack and bore activities associated with the installation of the gas pipeline. The purpose of this permit is to ensure there is no damage to the channel flood control capacity and function.

To minimize impacts to Carbon Creek from pit excavation and drilling, the applicant would also be required to apply for Clean Water Act, section 401 and 404 permits, administered by the Water Board and U.S. Army Corps of Engineers, respectively. The purpose of these permits is to address construction activities associated with the proposed jack and bore operation that may have the potential for adverse impacts to water quality from surface or sub-surface pollutants.

Since the section 401, 404, and 408 permits are federal Clean Water Act permits the Energy Commission does not have jurisdiction over their issuance. However to ensure compliance staff has included the requirement that the project owner provide the CPM with proof that the appropriate permits were obtained in Condition of Certification **SOIL&WATER-7**.

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.

The Geotechnical Report provided by the applicant states that depth to groundwater under the Stanton project site is approximately 20 feet. Therefore, it is unlikely that dewatering would be done for project construction. Also, 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. While staff agrees with the applicant, staff notes that SARWQCB imposes specific requirements for wastewater related to hydrostatic testing and construction dewatering, if necessary (described further in Wastewater Management below). Staff recommends Condition of Certification **SOIL&WATER-3** to ensure that any contaminated groundwater collected during hydrostatic testing and/or dewatering would be properly disposed in accordance with SARWQCB requirements. With implementation of Condition of Certification **SOIL&WATER-3**, the impacts of Stanton's construction on groundwater quality and quantity would be less than significant.

Water Supply

The construction water supply would be potable water provided by Golden State Water Company. The project would use about 5.6 acre-feet during construction. Golden State Water Company has provided the applicant with a will-serve letter demonstrating they have adequate supply available and are able to serve the project both during the construction and operation phases. Because the amount of water used for construction is expected to be small, Stanton's construction activities would have a less than significant impact on the Golden State Water Company's potable water supplies. Staff also evaluated whether a Water Supply Assessment was necessary in accordance with Water Code Section 10910. The analysis is provided in the LORS compliance section below. Staff determined that given the limited water use for both construction and operation of the project, no further detailed availability analysis was required.

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[2]. 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. 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 NPDES permit No. CAG998001 adopted by SARWQCB, which regulates discharges of low threat waste water including hydrostatic test water and construction dewatering water (if required) to surface waters in the Santa Ana Region would ensure that the project's construction wastewater discharges on soil and water resources would be less than significant. This permit specifies discharge prohibitions, effluent limitations, and monitoring and reporting requirements to show that minimum water quality standards are achieved.

Since the industrial wastewater from the Stanton project site would consist of RO reject, it would not introduce any external chemicals or metals into the waste stream. Therefore, an industrial wastewater discharge permit is not required, as the applicant for the Stanton project was informed through communications with the OCSD. Staff recommends Conditions of Certification **SOIL&WATER-3**, which would require the applicant to comply with the applicable permits based on project discharges and provide the CPM with copies of any correspondence between the project owner and the SWRCB or the SARWQCB related to permit compliance. Additional Conditions of Certification in the **Waste Management** section of this FSA would require reports of

[2] 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.

hazardous waste disposal in accordance with all applicable federal, state, and local requirements.

OPERATION

Soil Erosion and Surface Water Quality

Offsite sedimentation and increased storm water runoff can potentially have an adverse impact on surface water quality. Water quality can be affected by sedimentation caused by erosion, by runoff carrying contaminants, and by direct discharge of pollutants. As land is developed, the new impervious surfaces can send an increased volume of runoff containing oils, heavy metals, and other contaminants into adjacent water bodies. To protect the project's receiving water bodies (Stanton Storm Channel and Pacific Ocean) from site storm water discharges, the Stanton project would be required to comply with Orange County's post-construction storm water design guidelines.

The Stanton project would be constructed in the city of Stanton, within the permit boundaries of "North Orange County," a Phase I municipal separate storm sewer system (MS4), regulated by the SARWQCB. The SARWQCB adopted the municipal National Pollutant Discharge Elimination System (NPDES) Permit Order No. R8-2009-0030 for the city of Stanton and other member municipalities in the North Orange County area. Priority development and redevelopment projects in the region, which includes the proposed project, are subject to the requirements contained in Orange County's 2011 Model WQMP (OC 2011).

The purpose of the storm water requirements is to minimize the influence that development projects would have on water quality and regional runoff. This is referred to as Low Impact Development (LID) in the Model WQMP. A Priority Project can comply by developing a conceptual plan that describes which best management practices (BMPs) could be used to satisfy the requirements. The plan should describe what potential source control, hydromodification control, and treatment controls might be necessary to meet the LID requirements. The selection process is based on how each drainage area in the development handles the 2-year, 24-hour, or equivalent storm.

The Stanton project would be required to comply with the Model WQMP, based on the project's redevelopment activity that results in the creation or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Stanton would create an impervious area of approximately 1.02 acres, or 44,431 square feet, significantly more than the threshold. The site drainage design relies on the use of infiltration piping and infiltration inlet structures to mitigate for the expected increases in runoff volume and peak flow, and shortening of the time-of-concentration from the impervious areas.

Staff consulted the Orange County water quality Technical Guidance Document (TGD) during the evaluation of the proposed project's storm water drainage design (TGD 2013). The TGD was prepared by Orange County to assist storm water design practitioners meet the requirements of the Model WQMP. It provides example calculations along with interpretations of the regulations. Calculations are performed for Drainage Management Areas (DMA) that are subareas of the larger project site believed to have similar drainage characteristics. Staff checked the proposed design against the requirements for post-construction runoff. Key compliance criteria are:

- Post-development runoff volume for the 2-year, 24-hour storm event must be within 105 percent of the pre-development condition.
- Post-development time-of-concentration (Toc) for the 2-year, 24-hour storm event cannot be less than 95 percent of the pre-development condition.
- Post-development peak discharge for the 2-year, 24-hour storm event must be within 110 percent of the pre-development condition

Staff reviewed the applicant's submittals (SERC 2018f, SERC 2018h, and SERC 2018m) and compiled the modeled flow estimates that would be used to assess compliance. **Soil and Water Resources Tables 2** and **3** contain estimates of pre- and post-development runoff volume, time-of-concentration, and peak discharge for the three DMAs delineated by the applicant. DMA 1 is on Parcel 1, DMAs 2 and 3 are on Parcel 2. The site drainage design relies on a series of perforated drain pipes underlain by a gravel retention rock base and storm water retention chamber units to infiltrate and regulate flows within the three DMA's, DMA1, DMA2, and DMA3.

- The drainage design for DMA 1 would include 1,047 ft. of perforated storm drain underlain by one foot of gravel substrate. Weirs would be constructed within the inlet structures to cause storm flows to be retained and infiltrated. The farthest downstream inlet unit would contain a 0.5 ft. by 0.2 ft. orifice to cause detention of flow within the storm drain system. Flows from DMA 1 would ultimately discharge to the eastern bank of the Stanton Channel via the existing outlet.
- DMA 2 would drain to a single low point where flows would be conveyed to a proposed 8-inch pipe to a Stormtech chamber system for retention and subsequent infiltration. Flows from DMA 2 would ultimately drain to an existing 36-inch storm drain and discharge to the western bank of the Stanton Channel via the existing outlet.
- DMA 3 would also drain to a Stormtech chamber system where storm water would be retained and infiltrated. Onsite inlets would be equipped with filters to provide pretreatment of storm water. Flows from DMA 3 would ultimately drain to an existing 36-inch storm drain and discharge to the western bank of the Stanton Channel via the existing outlet.

Soil and Water Resources Table 2 shows that the pre-construction discharge from DMA1 is 1,743 ft^3, therefore 105 percent of the pre-development condition (maximum post-development condition specified in criteria listed above) is 1,830 ft^3. **Soil and Water Resources Table 3** shows that with the proposed drainage system the runoff volume would be reduced to 453 ft^3 . This would be significantly less than the requirement that post-development runoff volume be within 105 percent of the pre-development condition. The discharge volume would be similarly reduced in the post-construction condition for DMA 2 and DMA 3. The total site discharge would also be reduced from 14,075 ft^3 to 1,814 ft^3 in the post-construction condition.

Soil & Water Resources Table 2
Pre-Construction Site Discharge

	DMA1	DMA2	DMA3	Total
area (acres)	1.75	0.80	0.81	3.36
volume (ft^3)	1,743	6,970	7,105	14,075
peak flow (ft^3/s)	0.79	1.43	1.33	-
Toc (min)	30.77	5.74	7.08	-

Soil & Water Resources Table 3
Post-Construction Site Discharge

	DMA1	DMA2	DMA3	Total
area (acres)	1.75	0.80	0.81	3.36
volume (ft^3)	453	0	1,361	1,814
peak flow (ft^3/s)	0.67	0.93	0.86	-
Toc (min)	66.2	81.2	24.5	-

Pre- and post-construction peak discharge conditions can also be compared with **Soil and Water Resources Table 2** and **Soil and Water Resources Table 3**. The proposed project peak discharge from each DMA would be less than the existing condition peak discharge, which is less than 110 percent of the pre-development condition and therefore complies with the county's compliance criteria.

Pre- and post-construction Toc of discharge can also be compared with **Soil and Water Resources Table 2** and **Soil and Water Resources Table 3**. The proposed Toc of discharge from each DMA would be greater in the proposed condition, which is not less than the minimum of 95 percent of the pre-development condition, and therefore complies with the county's compliance criteria.

The preliminary design for installation of the proposed retention and infiltration structures, in conjunction with the proposal to implement source controls like disconnection of impervious areas, would be adequate for the treatment of storm water in the post-construction condition. Staff found that the drainage design as described would be expected to meet the requirements of the Model WQMP. Staff still expects Orange County staff to review the project owner's Final WQMP and to provide comments on the final design, to ensure that Orange County is able to comply with their Phase 1 MS4 requirements.

Staff proposes Condition of Certification **SOIL&WATER-2**, which would require the project owner to comply with the local site design criteria for its post-construction storm water control BMPs and prepare a WQMP. With the implementation of this condition of certification, impacts from hydromodification, soil erosion, and polluted runoff would be avoided or reduced during operation to less than significant.

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 from 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 Stanton on groundwater quality would be less than significant.

Operation of Stanton would not include any groundwater pumping, so the proposed facility would not directly cause groundwater drawdown.

Water Supply and Use

Stanton proposes to use potable water from the Golden State Water Company for sanitary and operation needs. Estimated total potable water use would be 34 AF at maximum per year for operations. Since the project site would be unstaffed, minimal amounts of water would be used for domestic and sanitary uses. The applicant estimates (SERC 2018m) sanitary uses would be intermittent.

The Golden State Water Company is the retail water provider for the area where the project would be located and currently supplies potable water to the business presently occupying the project site. The applicant provided a copy of a Will-Serve letter from the Golden State Water Company stating that the water would be available for the project use at the maximum quantity needed. Staff also evaluated whether a Water Supply Assessment was necessary in accordance with Water Code Section 10910. The analysis is provided in the LORS compliance section below. Staff determined that given the limited water use for both construction and operation of the project, no further detailed availability analysis was required. For these reasons, staff concludes that the use of potable water for the proposed project would not adversely impact the city's potable water supplies. Compliance with Conditions of Certification **SOIL&WATER-4** and **SOIL&WATER-5** would ensure the project owner complies with the water use limits consistent with this analysis.

The applicant considered using recycled water for project operation. Since the closest recycled water connection to the project is about 8 miles away, and given the small amount of water needed for the project, staff agrees with the applicant that it would be economically infeasible. However, as was discussed above, since delivery of potable water by the Golden State Water Company includes groundwater, and since OCWD uses recycled water to recharge the groundwater through the GWRS, the project would indirectly use recycled water.

Wastewater Management

The Stanton facility would have both sanitary and operation wastewater discharges during project operation. Sanitary wastewater volumes would be minimal since the project would be unstaffed for extended periods of time. Operation wastewater is primarily reverse osmosis filter backwash 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.

The applicant estimates wastewater discharge during industrial operation to be between 42 and 52 gpm. OCSD Ordinance No. OCSD-48 specifies the fees that must be paid by entities receiving sanitary sewer service within the OCSD, as well as the sewerage system design and connection requirements. As stated in the AFC, the project owner has been informed that the city of Stanton would accept the project wastewater. The project owner would also direct payments for sewer service to the city of Stanton. Staff proposes that the project owner comply with this code section and with Condition of Certification **SOIL&WATER-6**, which would require that the project owner pay the fees normally required by the county or city for sanitary sewer connections.

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 FSA).

Staff notes CEQA's explicit distinction between significant effects of a project on the environment and significant effects of the environment on a project.[3] Of the four bullets listed above, the first bullet represents impacts to the environment caused by the project. This item is the most relevant to a CEQA impacts analysis, whereas the other bulleted items address the risks to project reliability. 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, or whether the project reliability would be at risk.

Project-Induced Offsite Flooding Potential

Staff reviewed the proposed project drainage design to understand how or if the project could alter local drainage patterns or flooding potential for neighboring properties. The proposed site receives run-on to both Parcels, 1 and 2. Parcel 1 takes on drainage from about one acre of the lot to the north. Parcel 2 takes on about a half-acre of drainage from Dale Avenue. Both of these areas are incorporated into the drainage design and are expected to be handled by the proposed onsite drainage system. The proposed project would collect all onsite storm water in its drainage system, which discharges to the Stanton Storm Channel. The total runoff volume and peak flow from the site, post-condition, are expected to closely match the pre-construction runoff conditions, as required by Orange County's 2011 Model WQMP. Condition of Certification **SOIL&WATER-2** would require the project owner to submit a final WQMP to Orange County for review and comment and Energy Commission staff for review and approval. Staff therefore does not expect the site to need to redirect a significant amount of flow or induce offsite flooding.

Flooding Impact on Reliability

As was described in the **Setting and Existing Conditions** section above, the site is bisected by the Stanton Storm Channel and is not located within a designated flood zone. The site is located within a flood "Zone X," as designated by the FEMA Flood Insurance Rate Map (FIRM) (06059C0136J), dated December 3, 2009. The site is therefore in a zone described by FEMA as an area of "0.2% annual chance of flood." This zone is otherwise known as the 500-year flood zone, or above the 100-year flood zone. Projects constructed within the 100-year flood zone would usually be subject to additional design and insurance requirements. Since the project would be constructed outside of the 100-year flood zone, no additional requirements for flood protection are expected.

The risk of the site flooding from Stanton Storm Channel is low. Staff would not expect the project owner to design any additional features or measures to prevent flooding. The site has no unusual risk to reliability from flooding.

[3] *California Building Industry Association v. Bay Area Air Quality Management District*, Case No. S213478 (Cal. Supreme Court, December 17, 2015)

Vehicle and Utility Bridge Installation

The proposed project would require the installation of a vehicle bridge across the Stanton Storm Channel to allow access to both sides of the project site. Stanton would also require the installation of a utility bridge across the Stanton Storm Channel. The applicant has been working closely with the Orange County Public Works staff on the exact location and geometry of the two bridges. The applicant is not, however, expecting to build within the channel or cause any obstruction to flow (SERC 2017i). Staff does not anticipate any impacts to channel flow capacity or the floodway.

To ensure that the bridges are constructed in accordance with the Orange County requirements and not cause an obstruction to channel flow, staff proposes Condition of Certification **SOIL&WATER-8** that would require the applicant to obtain an encroachment permit through the Orange County Public Works Department.

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).

The applicant has shown three significant projects proposed in the vicinity that are worthy of consideration, a gas station, a five-story mixed use development, and a grocery store. None of these projects would make the effects of the proposed project described in this analysis cumulatively considerable.

Surface Water and Groundwater Quality

As identified in the AFC, there are three projects within six miles of the proposed Stanton project site that have been approved, are under review, or in construction. These projects have the potential to contribute to increased 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. The city and SARWQCB are responsible for ensuring all projects comply with the water quality requirements, the same as the project. By ensuring all projects comply with all applicable erosion and storm water management LORS, including the NPDES Construction General Permit and the Orange County Model WQMP, these projects combined with the proposed project would avoid or substantially lessen the potential cumulative impact. Stanton contribution would not be “cumulatively considerable” and, therefore, not significant.

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. This process also tests the potential for a cumulative impact of a project on the local water supply.

Based on definitions detailed in the Water Code, staff is of the opinion that the proposed projects would not meet the criteria to require a WSA for the following reasons:

- The projects would occupy less than 40 acres.
- The projects would have less than 650,000 square feet of floor area.
- The projects would use less water than a 500 dwelling unit project. Guidance for interpreting Section 10912 is provided in a California Department of Water Resources (DWR) document titled "Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 (DWR, 2003)." A helpful interpretive section on page 3 of the Guidebook, explains how to estimate water consumption for 500 dwelling units. It states that one dwelling unit typically consumes 0.3 to 0.5 AFY (DWR, 2003). Therefore 500 dwelling units could be interpreted to mean 150 to 250 AFY. This is much higher than the maximum demand that would be expected of any of these projects.

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 4** show that the below-poverty-level population in Orange County Census Division and the population receiving free or reduced price meals in most of the school districts (five out of seven total) within Orange County, with the exception of Cypress Elementary and Los Alamitos Unified school districts, constitute an EJ population based on low income.

Due to the presence of an EJ population among residents, this analysis must identify whether the construction and operation of the proposed Stanton 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 evaluation concludes that both present-day and future flood risks are low. 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.

As discussed in the subsections above, the Stanton project would mitigate potential impacts to water quality to less than significant by implementing conditions of certification, which would ensure that SARWQCB's minimum water quality standards are met. Staff evaluated potential water quality impacts of the project's wastewater discharges on EJ communities, provided it complies 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

Staff reviewed the information contained within **Environmental Justice Table 4** to get information about the background surface water and groundwater quality at the site and vicinity. The CalEnviroScreen data collection (https://oehha.ca.gov/calenviroscreen/report/ calenviroscreen-30) provides a useful scoring system for screening cumulative and environmental justice impacts based on water quality. Staff acknowledges the limitations on the applicability of this data collection to site-specific analysis, however, finds it useful for putting project impacts into regional context. The categories of the data collection pertinent to this section are titled Drinking Water, Groundwater Threats, and Impaired Water Bodies.

Drinking Water

The Drinking Water category of review is intended to identify disadvantaged populations that are exposed to additional risk through the use of their drinking water source. The disadvantaged census tracts within six miles of the site score an average of 37 percent for relative risk from drinking water exposure on a scale of 0 to 100, where 0 means no risk and 100 means highest risk (more details about the scores can be found in the **Environment Justice** section of the staff analysis). Scores for an environmental quality parameter are assigned to individual tracts and to the six-mile radius area of interest, as an average score for the area influenced by the project. Both a score for the entire area or for the individual tracts of 75 or higher would call for additional consideration. The score of 37 in the Drinking Water category suggests that the general vicinity is not particularly at risk due to their use of drinking water. Further evaluation shows that none of the census tracts score higher than 63 percent within the six-mile radius of the proposed project site.

Since the Stanton facility would be unstaffed most of the time minimal sanitary wastewater would be generated during facility operation. During construction, sanitary wastewater would be collected in portable toilets (no discharge) supplied by a licensed contractor for collection and disposal at an appropriate receiving facility. The project would manage all of its wastewater discharges (industrial process wastewater and storm water runoff) to completely avoid or significantly minimize any contribution of related pollutants. Stanton's industrial wastewater would contain primarily Reverse Osmosis (RO) reject. Industrial wastewater from facility operations would be discharged to the adjacent sanitary sewer through an agreement with the city of Stanton. Storm water runoff would be treated by low impact development treatment measures such as a filtration basin, source control methods, and/or biofiltration measures prior to its discharge to the Stanton Storm Water Canal, which drains into the Bolsa Chica Channel and ultimately to the Pacific Ocean. Therefore, there would be no significant contribution of pollutants from the project that could affect the local drinking water supplies. Because the facility's wastewater discharges would not affect potable water supplies or surface water bodies in the area, the project's mitigated water quality impacts would not disproportionately affect EJ populations.

Groundwater Threats

The Groundwater Threats category of review is intended to identify disadvantaged populations that are exposed to additional risk through soil and air due to local groundwater contamination. The disadvantaged census tracts within six miles of the site score an average of 50-percent for relative risk from exposure to Groundwater Threats. Following the reasoning above, this score suggests that the general vicinity is not particularly at risk due to their exposure to local soil and air due to groundwater contamination. Further evaluation shows that two of the 39 disadvantaged tracts score above 90-percent. The locations of tracts 6059011601 and 6037503902 are at least 5.5 miles away from the proposed project site. The proposed project would not be expected to cumulatively contribute to pollution in these areas based on proximity. As was stated in the Drinking Water section above, the project would also be treating all possible wastewater discharges to a level that would not result in a significant impact.

Because the wastewater discharges from facility operations or during construction activities would not affect groundwater or soil resources in the area, the project's mitigated impacts would not cumulatively or disproportionately affect EJ populations.

Impaired Water Bodies

The Impaired Water Bodies category of review is intended to identify disadvantaged populations that are exposed to additional risk from pollution-impaired surface water bodies. In the vicinity of the proposed project, the Santa Ana RWQCB establishes water quality objectives (standards) for 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. None of the water bodies that would receive water from the project site are on a 303(d) list; therefore, there are no TMDL plans in force for those water bodies.

The disadvantaged census tracts within six miles of the site score an average of 12-percent for relative risk from exposure to impaired surface water bodies. Again, this suggests that the general vicinity is not particularly at risk due to their exposure to local impaired surface water bodies. Further evaluation shows that two of the 39 disadvantaged tracts score above 90-percent. The locations of tracts 6037555102 and 6037555211 are at least 5.5 miles away from the proposed project site. The proposed project would not be expected to cumulatively contribute to pollution in these areas based on proximity. As was stated in the Drinking Water section above, the project will also be treating all possible wastewater discharges and disposing offsite at appropriately licensed facilities thus ensuring potential impacts are less than significant.

Because Stanton's facility wastewater discharges would not affect already impaired water bodies in the area, the project's mitigated impacts would not cumulatively or 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 also are less likely to reinforce buildings or buy insurance because the decision to make major improvements and financial gains typically lies with property owners. 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.

COMPLIANCE WITH LORS

CLEAN WATER ACT

Staff has concluded that the proposed project would satisfy the requirements of the CWA by complying with applicable NPDES permits from the SWRCB and SARWQCB. A Construction General Permit would regulate storm water discharges during construction of the project 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**, **SOIL&WATER-2**, **SOIL&WATER-3,** and **SOIL&WATER-7** would require compliance with the applicable permits and inform the CPM of appropriate BMP implementation and any issues regarding these permits.

CALIFORNIA CONSTITUTION, ARTICLE X, SECTION 2

The California Constitution, Article X, Section 2 requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited. The use of potable water for activities suitable for non-potable water use (e.g. construction, decommissioning, and demolition) when a water source of lower quality is available is inconsistent with California Constitution, Article X, Section 2.

The project would use potable water both for construction and operation. As discussed in the Water Supply section above, the applicant provided detailed information in the AFC regarding availability and cost of recycled water. Staff concurs with the applicant that it would be too costly to use recycled water for project operation based on the location of the nearest recycled water source, approximately 8 miles away and the limited average use of 13 AFY, with a maximum of 34 AFY.

CALIFORNIA WATER CODE

Section 13550

California Water Code (CWC) Section 13550 requires the use of recycled water for nonpotable uses if recycled water is available. The applicant provided detailed information in the AFC and staff agrees it would be not be economically or environmentally feasible to use recycled water for project operation based on the distance of approximately 8 miles to the potential recycled water line in the region, and the limited average project demand of 13 AFY, with a maximum of 34 AFY. Excavation, construction, and disruption of traffic for construction of an 8-mile pipeline would also result in disproportionate impacts for delivery of a relatively limited amount of recycled water.

Sections 10910-10915

These CWC sections require an agency managing a public water system to prepare a 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).

ORANGE COUNTY CODE

Title 4, Division 13 – Stormwater Management and Urban Runoff

Through its storm water ordinance, Orange County 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. These sections also require construction and development projects that meet applicability criteria to implement post-construction BMPs. These code sections also allow the county to comply with the SARWQCB Phase I municipal storm water permit NPDES Permit Order No. R8-2009-0030 for the city of Stanton and other member municipalities in the North Orange County area. Through

compliance with Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2**, the proposed project would comply with these code sections.

Orange County Sanitation District, Ordinance No. OCSD-48

This ordinance specifies the fees that must be paid by entities receiving sanitary sewer service within the OCSD as well as the sewerage system design and connection requirements. Through compliance with Condition of Certification **SOIL&WATER-6**, the proposed project would comply with this ordinance.

PUBLIC COMMENTS

Union Pacific (UP) Railroad Company submitted comments about the Stanton project on May 23, 2017 (see TN 217698, UPRR2017a). Staff's response to UP's comments regarding the **Soil & Water Resources** technical area is below.

UP Comment 1: *UP requests that the Commission ensure that the drainage plan relating to the project does not shift storm water toward UP property and infrastructure.*

Staff Response: Staff did not find any evidence that the proposed project would shift drainage towards UP property. Site drainage will be contained and directed toward the Stanton Storm Channel, similar to existing conditions.

CONCLUSIONS

Staff's conclusions based on analysis of the information are as follows:

1. Condition of Certification **SOIL&WATER-1** would reduce or avoid impacts of soil erosion and storm water runoff to surface water and groundwater quality during construction.

2. Post-construction storm water control best management practices (BMPs) would reduce storm water runoff impacts during operations to less than significant by compliance with Condition of Certification **SOIL&WATER-2**.

3. Potential impacts of Stanton's wastewater streams would be mitigated to less than significant during construction through compliance with Condition of Certification **SOIL&WATER-2** (to manage storm water runoff), **SOIL&WATER-3** (to manage hydrostatic testing and/or construction dewatering) and during operations with Condition of Certification **SOIL&WATER-6** (to manage sanitary waste).

4. Compliance with Conditions of Certification **SOIL&WATER-4** and **SOIL&WATER-5** would ensure the project owner complies with the water use limits consistent with this analysis.

5. During project operation, wastewater generated by the project would be discharged to the city of Stanton's sewer system. Condition of Certification **SOIL&WATER-6** requires documentation from the applicant demonstrating the city of Stanton's fees associated with sewer connections have been paid and they have complied with the requirements of the applicable ordinances.

6. Prior to project construction the project owner would be required to submit a Frac-Out Plan detailing how jack and bore activities would be conducted to ensure no significant impacts to Carbon Creek. Condition of Certification **SOIL&WATER-7** requires documentation of applicable permits and the preparation of a Frac-Out Plan.

7. Prior to project construction the project owner would be required to obtain an encroachment permit for the construction of a vehicle and a utility bridge. Condition of Certification **SOIL&WATER-8** requires the applicant to comply with Orange County Public Works Department requirements and obtain a Flood Control Encroachment Permit.

8. A Water Supply Assessment (WSA) is not required for Stanton because it is not a "Project" as defined by California Water Code Section 10912.

9. The likelihood of flooding at the site is low. The consequence of flooding onsite is also expected to be low.

10. Stanton'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 soil or water resources environmental justice issues resulting from the proposed project. No environmental justice populations would be significantly, adversely, or disproportionately impacted.

12. Stanton would comply with federal, state, and local LORS with implementation of conditions of certification recommended by staff.

PROPOSED CONDITIONS OF CERTIFICATION

NPDES CONSTRUCTION PERMIT REQUIREMENTS

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 to the CPM proof that the construction permit was granted and that a waste discharge identification number (WDID) was issued by the State Water Resources Control Board (SWRCB). 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 SWRCB or the Santa Ana Regional Water Quality Control Board (SARWQCB) 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.

STORM WATER MANAGEMENT PLAN

SOIL&WATER-2: The project owner shall comply with the Orange County Model Water Quality Management Plan (WQMP) requirements in accordance with Title 4, Division 13 and Title 9, Division 1, of the Orange County Code. The project owner shall provide a WQMP for post-construction storm water BMPs to Orange County for review and the CPM for review and approval. The project owner shall also pay necessary fees for compliance with the WQMP provisions of the Orange County Code. 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. It is the Energy Commission's intent that these requirements be enforceable by both the Energy Commission and Orange County. Accordingly, the Commission and Orange County shall confer with each other and coordinate, as needed, in enforcement of the requirements.

Verification: At least 120 days prior to site grading, the project owner shall provide a WQMP for post-construction storm water BMPs to the CPM and to the Orange County Public Works Department. At least thirty days prior to Stanton grading activities, the project owner shall submit to the CPM verification of the county's completed review of the WQMP or a copy of correspondence indicating they will not be reviewing the submittal. 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 the county regarding storm water management.

HYDROSTATIC AND DEWATERING WATER DISCHARGE PERMIT REQUIREMENTS

SOIL&WATER-3: Prior to initiation of discharge to surface water from hydrostatic testing water or groundwater from dewatering, the project owner shall obtain a National Pollutant Discharge Elimination System permit for discharge when applicable. The project owner shall comply with the requirements of the NPDES Permit Order No. CAG998001 for hydrostatic testing and dewatering (if applicable) water discharge. The project owner shall provide a copy of all permit documentation sent to the Santa Ana Regional Water Quality Control Board (SARWQCB) or State Water Resources Control Board (SWRCB) to the CPM and notify the CPM in writing of any reported non-compliance.

Verification: At least thirty (30) days prior to the first scheduled hydrostatic testing event or discharge of groundwater dewatering water, the project owner shall submit to the CPM documentation that all necessary NPDES permits were obtained from the SARWQCB or SWRCB. At least thirty days (30) prior to project construction, the project owner shall submit to the CPM a copy of the relevant plans and permits received. The project owner shall submit to the CPM all copies of any relevant correspondence between the project owner and the SWRCB regarding NPDES permits in the annual compliance report.

WATER USE AND REPORTING

SOIL&WATER-4: Water supply for project construction and operation shall be potable water supplied by Golden State Water Company. Project water use for construction shall not exceed 5.6 acre-feet. Project operation water use shall not exceed 34 AFY. 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.

Verification: During project construction, the monthly compliance report shall include a summary of monthly water use. After construction is complete, the project's annual compliance report shall include a monthly and annual summary of water use.

WATER METERING

SOIL&WATER-5: The project owner shall comply with and pay all necessary fees for connection to Golden State Water Company supply system. Prior to the use of water during commercial operation, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the total volume(s) of water supplied from Golden State Water Company. Those metering devices shall be operational for the life of the project.

Verification: At least thirty (30) days prior to use of the Golden State Water Company potable water supply, the project owner shall submit to the CPM evidence that they have complied with all requirements and paid the necessary fees for connection. At least thirty (30) days prior to use of water, the project owner shall also provide evidence that metering devices have been installed and are operational. The project owner shall provide a report on the servicing, testing, and calibration of the metering devices in the annual compliance report. Fees paid to Golden State Water Company shall be reported in the Annual Compliance Report (ACR) for the life of the project.

SEWER CONNECTIONS

SOIL&WATER-6: The project owner shall comply with and pay the city of Stanton all fees normally associated with connections to the city's sanitary sewer system for process and sanitary wastewater as defined in the city's code, Title 14 Water and Sewers.

Verification: Prior to the use of the city's sewer system the project owner shall provide the CPM documentation indicating that the city has accepted the project's connections to the sewer system. Fees paid to the city shall be reported in the Annual Compliance Report (ACR) for the life of the project. The ACR shall also include a monthly and annual summary of wastewater discharge.

FRAC-OUT PLAN FOR NATURAL GAS LINE CONSTRUCTION

SOIL&WATER-7: Prior to the initiation of any Carbon Creek jack and bore activities for the natural gas pipeline, the project owner shall apply for coverage under the following permits:

A. Section 401 water quality certification or a waiver of waste discharge requirements from the Santa Ana Regional Water Control Board or the State Water Resources Control Board;

B. Section 404 acceptance of preconstruction notification for nationwide permit(s) from the US Army Corps of Engineers;

C. Section 408 permit from the US Army Corps of Engineers; and

D. Streambed Alteration Agreement(s), developed in consultation with the California Department of Fish and Wildlife.

Modifications of the construction techniques to be used or the location of the crossing that are made as a result of permit conditions shall be reviewed by the CPM. The project owner shall implement the terms and conditions contained in all permits.

Verification: At least thirty (30) days prior to any construction-related activities that could affect water quality in Carbon Creek, the project owner shall provide the CPM with copies of the applicable permits or agreements.

BRIDGES ENCROACHMENT PERMIT

SOIL&WATER-8: The project owner shall obtain an encroachment permit for the construction of the vehicle and utility bridges from the Orange County Public Works Department in accordance with Orange County Code – Title 9, Division 2, Article 2, Sections 9-2-40 and 9-2-50. The project owner shall pay all necessary fees to Orange County Public Works Department for compliance with the permit review and approval process. The project owner shall submit the encroachment permit application package to Orange County Public Works Department and the CPM for review and approval prior to bridge construction. The project owner shall also provide a copy of the approved permit to the CPM.

Verification: At least ninety (90) days prior to bridge construction, the project owner shall provide a copy of the application package for the encroachment permit and any comments from Orange County Public Works Department to the CPM for review and approval. At least thirty (30) days prior to bridge construction, the project owner shall submit a copy of the final approved permit from Orange County Public Works Department to the CPM for review and approval.

REFERENCES

DWR 2003 – California Department of Water Resources. Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 to assist water suppliers, cities, and counties in integrating water and land use planning. October 8, 2003.

OC 2011 – Orange County Model Water Quality Management Plan. Prepared by Orange County on May 19, 2011.

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC 2016b – Stanton Energy Reliability Center, LLC (TN 214207-1 to 37). Application for Certification Vol.2, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC 2016i – CH2M/Applicant Consultant (TN 215097). Stanton Energy Reliability Center Application for Certification Data Adequacy Supplement, dated December 21, 2016. Submitted to John Heiser/CEC/Docket Unit on December 22, 2016.

SERC 2017b – CH2M/Applicant Consultant (TN 217461). Stanton Energy Reliability Center's Data Request Response, Set 1 (A1-A63). Submitted to John Heiser/CEC/Docket Unit on May 5, 2017.

SERC 2017i – CH2M/Applicant Consultant (TN 220821). Stanton Energy Reliability Center Data Request Response Set 2, for Data Requests A64 through A70. Submitted to CEC/Docket Unit on August 17, 2017.

SERC 2018e – DayZen LLC/Scott A. Galati (TN 223179). Stanton Energy Reliability Center LLC's Initial Comments on the Preliminary Staff Assessment, dated April 11, 2018. Submitted to CEC/Docket Unit on April 11, 2018.

SERC 2018f – DayZen LLC (TN 223184). Stanton Energy Reliability Center LLC's Water Quality Management Plan, dated April 2018. Submitted to CEC/Docket Unit on April 12, 2018.

SERC 2018h – DayZen LLC/Scott A. Galati (TN 223281). Stanton Energy Reliability Center LLC's Response to PSA Workshop Queries, dated April 26, 2018. Submitted to CEC/Docket Unit on April 26, 2018.

SERC 2018k – DayZen LLC/Scott A. Galati (TN 223409). Stanton Energy Reliability Center, LLC's Supplemental Responses to PSA Workshop Query Relating to Stormwater Discharge, dated May 9, 2018. Submitted to CEC/Docket Unit on May 9, 2018.

SERC 2018m – CH2M (TN 223425). Stanton Energy Reliability Center's Responses to Data Requests A73 through A85, dated May 2018. Submitted to CEC/Docket Unit on May 11, 2018.

TGD 2013 – Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans. Prepared by Orange County on December 20, 2013.

UPRR2017a – Union Pacific Railroad Company Comments (TN 217698). Stanton Energy Reliability Center. Submitted to CEC/Docket Unit on May 23, 2017.

TRAFFIC AND TRANSPORTATION

Testimony of Andrea Koch

SUMMARY OF CONCLUSIONS

With implementation of staff's proposed Conditions of Certification **TRANS-1** through **TRANS-8**, the proposed Stanton Energy Reliability Center (Stanton or project) would not have a substantial adverse effect on traffic and transportation, and would be in conformance with applicable laws, ordinances, regulations, and standards (LORS) pertaining to traffic and transportation.

INTRODUCTION

In compliance with the California Environmental Quality Act (CEQA) and Energy Commission requirements, this analysis discusses the project's potential impacts to the surrounding traffic and transportation system, as well as the project's consistency with applicable LORS. This analysis includes proposed conditions of certification that would either avoid or reduce impacts or ensure compliance with applicable LORS.

SETTING

The proposed project site (comprising Parcel 1 and Parcel 2) is located in the city of Stanton, Orange County at 10711 Dale Avenue in an area surrounded by an extensive roadway network. Regional vehicular access to the site would be from Interstate 5 (I-5), State Route 91 (SR-91), Interstate 405 (I-405), and State Route 22 (SR-22). Local access would be from Beach Boulevard (also known as State Route 39, or SR-39) to West Cerritos Avenue or Katella Avenue. The primary direct access to the site would be from Dale Avenue to Parcel 1, and secondary access would be from the intersection of Fern Avenue and Pacific Street to Parcel 2. Vehicles traveling to or from the project site would pass through the nearby jurisdictions of Orange County and the cities of Stanton, Garden Grove, Westminster, Anaheim, and Buena Park.

Nearby transportation facilities include Los Alamitos Army Airfield (LAAA), located approximately 2.9 miles southwest of the Stanton project site, Fullerton Municipal Airport (FMA), located approximately 4.5 miles north of the project site, and the Union Pacific Railroad (UPRR) Stanton Industrial Lead, which abuts the site to the south.

For maps of the project site in relation to regional and local traffic and transportation systems, see **Traffic and Transportation Figure 1 – Regional Traffic and Transportation Setting** and **Traffic and Transportation Figure 2 – Local Traffic and Transportation Setting.**

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Traffic and Transportation Table 1 provides a general description of adopted federal, state, and local LORS that apply to the project and pertain to traffic and transportation. Staff's analysis of project compliance with these LORS is presented in **Traffic and Transportation Table 5**.

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.
	Title 14, Part 77, Section 77.9: Requires notification of the Federal Aviation Administration (FAA) of any construction or alterations exceeding 200 feet above ground level. Also requires FAA notification of any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.
State	
California Vehicle Code: Divisions 2, 6, 12, 13, 14, 15	Regulations pertaining to: licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
California Streets and Highways Code: Division 1, Chapter 1, Article 3, Section 117; Division 1, Chapter 3; Division 2, Chap. 5.5 and 6	Regulations for the care and protection of state and county highways and provisions for the issuance of written permits for construction in the right-of-way.
California Health and Safety Code: Section 25160 et seq.	Pertains to operators of vehicles transporting hazardous materials; promotes safe transportation of hazardous materials.
Local	
Orange County Congestion Management Program (CMP)	Requires traffic impact analysis for development projects generating 2,400 or more daily trips for projects adjacent to the Congestion Management Program (CMP) Highway System, and 1,600 or more daily trips for projects that directly access the CMP Highway System (page 41).
	Requires CMP highway system intersections to maintain a level of service (LOS) grade of “E” or better, unless the baseline is lower than “E”, in which case, the intersection capacity utilization rating cannot increase by more than 0.10 (pages 6-7, 9).
Orange County Code, Section 6-1-2	Requires a permit for construction in the right-of-way.
City of Stanton 2008 General Plan Infrastructure & Community Services Element	Action ICS-1.1.2 (d): Maintain LOS D or better on city streets and LOS E or better for CMP or Smart Street roadways. Smart Streets include Beach Boulevard and Katella Avenue.
City of Stanton Municipal Code	Section 10.04.060: Requires commercial vehicles over five tons, including load, to use designated truck routes (including Katella Avenue and Beach Boulevard).
	Section 12.04.010: Requires permits to conduct construction activities within the city right-of-way.

Applicable LORS	Description
City of Anaheim 2004 General Plan Circulation Element	Goal 2.1: Maintain efficient traffic operations on city streets and maintain a peak hour level of service not worse than LOS D at street intersections.
City of Anaheim Municipal Code	Section 12.12.010: Requires permits to conduct construction activities within the city's right-of-way, including obstructions and repairs.
	Section 14.48.050: Requires vehicles over three tons to use designated truck routes (including Beach Boulevard, Lincoln Avenue, Ball Road, Katella Avenue, and La Palma Avenue).
	Section 14.52.010: Requires issuance of a permit for the movement or operation of vehicles, equipment, or load on Anaheim highways with weight or size exceeding the maximum permitted by the California Vehicle Code.
City of Buena Park 2010 General Plan Mobility Element	Policy M-5.2: Maintain a citywide level of service not to exceed LOS D for intersections during peak hours. (The Circulation Element notes that this applies to non-CMP intersections. CMP intersections have an LOS standard of LOS E.)
	Policy M-5.3: Maintain a citywide level of service for roadway segments not to exceed LOS D for daily traffic.
City of Buena Park Municipal Code	Section 10.36.010: Establishes truck routes for vehicles exceeding three tons in weight.
	Chapter 12.08: Requires permits to conduct construction activities within the city's right-of-way.
City of Garden Grove 2030 General Plan Circulation Element	Policy CIR-1.2: Encourage a goal of LOS D or better for arterial intersections under the jurisdiction of Garden Grove.
	Policy CIR- 1.3: Strive to achieve a minimum traffic LOS of "D" throughout the city, except for major development areas at those intersections that are impacted by factors beyond the city's control or at intersections included in the deficient intersection list.
City of Garden Grove Municipal Code	Section 10.40.030: Establishes truck routes for vehicles exceeding three tons in weight.
	Section 11.04.190: Requires a permit to conduct construction in or under the surface of any street or sidewalk within the city.
City of Westminster 2016 General Plan Mobility Element	M-1.3 Level of Service: Maintain an LOS of "D" for vehicles at intersections and roadways when vehicles are considered a prioritized mode of travel.

Applicable LORS	Description
Orange County 2005 General Plan	Policy 3.2: Ensure that all intersections within the unincorporated portion of Orange County maintain a peak hour LOS of "D", according to the County Growth Management Plan Transportation Implementation Manual.
2013 City of Huntington Beach Circulation Element	The lowest acceptable performance for CMP intersections is LOS E.

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 Environmental Checklist for Transportation/Traffic and applicable LORS and manuals used by other governmental agencies. Specifically, staff analyzed whether the proposed project would:

1. cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);

2. conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, and including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

3. conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

4. substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

5. conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

6. result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;

7. produce a thermal plume or generate glare in an area where flights are expected to occur and cannot be avoided; or

8. have individual environmental effects that, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable or compound or increase other environmental impacts.

Level of Service and Study Locations

Level of service (LOS) 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[2]. See **Traffic and Transportation Figure 3 – Study Roadways and Intersections** for a map showing these study locations.

Roadways

- Beach Boulevard between:
  - SR-22 and Lampson Avenue
  - Lampson Avenue and Chapman Avenue
  - Chapman Avenue and Katella Avenue
  - Katella Avenue and West Cerritos Avenue
  - West Cerritos Avenue and Ball Road
  - Ball Road and Lincoln Avenue
  - Lincoln Avenue and SR-91
  - SR-91 and Artesia Boulevard
- West Cerritos Avenue between Beach Boulevard and Dale Avenue
- Dale Avenue between West Cerritos Avenue and Katella Avenue
- Katella Avenue between:
  - Beach Boulevard and Dale Avenue
  - Dale Avenue and Magnolia Avenue
  - Magnolia Avenue and Gilbert Street
  - Gilbert Street and Barclay Drive

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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.

2 As a result of Senate Bill 743 (Steinberg, 2013), the California Office of Planning and Research has proposed changes to the CEQA Guidelines that identify vehicles miles traveled (VMT) as the appropriate method for assessing a project's traffic impacts. This is a departure from past practices of using the LOS metric for automobile delay to evaluate traffic impacts. Once the California Natural Resources Agency adopts these changes to the CEQA Guidelines, Energy Commission staff will include analysis of VMT in the Traffic and Transportation section. Staff will also continue to assess LOS impacts for LORS compliance. The reason is that many local jurisdictions will likely continue to have LOS standards for local roads and intersections.

- Barclay Drive and Euclid Street
- Euclid Street and 9th Street
- 9th Street and Walnut Street
- Walnut Street and Anaheim Way

Intersections

- Beach Boulevard/Edinger Avenue/I-405 Southbound Ramps
- Beach Boulevard/Bolsa Avenue
- Beach Boulevard/SR-22 Eastbound Ramps
- Beach Boulevard/SR-22 Westbound Off Ramp
- Beach Boulevard/Katella Avenue
- Beach Boulevard/SR-91 Eastbound Ramps
- Beach Boulevard/SR-91 Westbound Ramps
- Beach Boulevard/I-5 Southbound Ramps

Staff used the LOS standards of Orange County, the Orange County Transportation Authority (OCTA), and the cities of Stanton, Anaheim, Buena Park, Garden Grove, Huntington Beach, and Westminster, identified in **Traffic and Transportation Table 1** above, as significance thresholds to determine whether project-generated traffic impacts to LOS would be significant.

TRAFFIC IMPACTS

The direct and indirect traffic impacts of the proposed project are discussed in this subsection.

If approved, project construction would span approximately 14 months, beginning in November 2018 and ending in December 2019. Construction would generally occur between 7AM and 8PM on weekdays and Saturdays. Operation of the plant, which would begin in December 2019, would require occasional deliveries and maintenance-related trips. Materials for facility maintenance would be delivered to the site approximately twice a week, and aqueous ammonia would be delivered an average of five times per year, with a maximum of six deliveries per month (SERC 2016a, 5.12-16). Regular plant operations would be remotely conducted by an offsite operator and/or an onsite technician. One to three technicians would perform onsite maintenance as needed (SERC 2016a, pg. 5.10-15).

Analysis of project traffic impacts to LOS focuses on the period of peak construction, which would employ the highest number of workers compared to other phases of construction and operation, generate the most vehicle trips, and result in the worst-case scenario for traffic impacts. Peak construction would occur in June 2019 during the 8th month of construction. Impacts to traffic LOS on the local roadway network from project operation are not analyzed because Stanton would be remotely operated and only

generate occasional maintenance-related trips; therefore, operations traffic would not significantly impact LOS on nearby roads and intersections.

Construction Traffic

Worker Traffic

The applicant and staff assume that 80 percent of the project construction workforce would commute locally from Orange County, with the remaining 20 percent commuting from nearby counties (SERC 2016a, p. 5.10-13). (See the **Socioeconomics** section of this document for more information.) The average size of the workforce over the entire construction period would be approximately 48 workers (SERC 2016a, pg. 5.10-11).

The peak construction period in June 2019 would involve 78 construction workers. It is estimated that 16 percent of the construction workforce (approximately 12 workers) would carpool, resulting in 66 daily construction worker round trips, or 132 daily one-way trips. This analysis conservatively assumes that all workers would arrive during the morning peak hours and depart during the evening peak hours. This would result in 66 one-way workforce vehicle arrival trips during the morning peak hours and 66 one-way workforce vehicle departure trips during the evening peak hours.

Truck Traffic

Peak construction would generate approximately 50 daily one-way delivery/haul truck trips, with 16 of these trips occurring during peak hours. For this traffic analysis, truck trips were converted to passenger car equivalent (PCE) trips at a ratio of 1.5 passenger cars for each truck. This resulted in 75 daily one-way PCE truck trips during the peak construction months, with 24 of these trips occurring during peak hours (12 one-way PCE truck trips during the morning peak and 12 one-way PCE truck trips during the evening peak).

Total Construction Traffic

The total number of construction workforce and truck trips generated during peak construction would be 207 daily one-way trips (132 one-way worker trips added to 75 one-way PCE truck trips). Approximately 156 of these one-way trips would occur during peak hours: 78 one-way trips during the morning peak and 78 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 the project, including construction worker trips and delivery/haul truck trips. Staff used the total construction traffic shown in this table to analyze 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[1]	66	132	66	66
Trucks (Delivery/Haul Vehicles) (PCE)[2]	37.5	75	12	12
Total	103.5	207	78	78

[1] Assumes a carpool rate of 1.5 passengers per car

[2] 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 1.5 PCE.

Impacts to Traffic LOS

The proposed Stanton project site is located in an urbanized area with a vast roadway network, enabling project-related traffic to use a variety of routes to access the project site. The following assumptions about regional construction trip routes (used by workers and trucks) were used in this traffic analysis:

- 25 percent of the trips would come from points north of the site via I-5 and SR-91.
- 25 percent of the trips would come from points south of the site via I-5, I-405 and SR-22.
- 25 percent of the trips would come from points east of the site via I-5 and SR-91.
- 25 percent of the trips would come from points west of the site via I-405 and SR-22.

Staff compared existing (baseline) traffic LOS on study roads and intersections to peak construction traffic LOS, as shown in **Traffic and Transportation Table 3**, below. As reflected in the table, all study roadway segments would operate at or above the applicable LOS standard during peak construction with the exception of Beach Boulevard between SR-22 and Lampson Avenue, and Beach Boulevard between Lampson Avenue and Chapman Avenue.

Traffic and Transportation Table 3:
Roadway Average Daily Traffic (ADT) and LOS: A Comparison between Baseline and Peak Construction Conditions

No.	Road Segment	Existing ADT and LOS	Peak Construction ADT and LOS	Project Trips	Agency or Agencies with Jurisdiction	Most Restrictive LOS Standard
Beach Boulevard						
1	Beach Boulevard, SR-22 to Lampson Avenue	74,600 LOS E	74,724 LOS E	124	OCTA[1], City of Stanton, City of Garden Grove[1], City of Westminster	LOS D (City of Westminster)
2	Beach Boulevard, Lampson Avenue to Chapman Avenue	77,600 LOS F	77,724 LOS F	124	OCTA[1], City of Stanton, City of Garden Grove[1]	LOS E (City of Stanton's LOS for CMP roads)
3	Beach Boulevard, Chapman Avenue to Katella Avenue	71,600 LOS E	71,724 LOS E	124	OCTA[1], City of Stanton	LOS E (City of Stanton's LOS for CMP roads)
4	Beach Boulevard, Katella Avenue to West Cerritos Avenue	64,500 LOS D	64,500 LOS D	0	OCTA[1], City of Stanton	LOS E (City of Stanton's LOS for CMP roads)
5	Beach Boulevard, West Cerritos Avenue to Ball Road	65,100 LOS D	65,170 LOS D	70	OCTA[1], City of Stanton, City of Anaheim[1]	LOS E (City of Stanton's LOS for CMP roads)
6	Beach Boulevard, Ball Road to Lincoln Avenue	62,400 LOS D	62,470 LOS D	70	OCTA[1], City of Anaheim[1]	NA (All LOS standards apply to intersections)
7	Beach Boulevard, Lincoln Avenue to SR-91	66,600 LOS D	66,670 LOS D	70	OCTA[1], City of Buena Park, City of Anaheim[1]	LOS D (City of Buena Park)
8	Beach Boulevard, SR-91 to Artesia Boulevard	57,800 LOS C	57,870 LOS C	70	OCTA[1], City of Buena Park	LOS D (City of Buena Park)

No.	Road Segment	Existing ADT and LOS	Peak Construction ADT and LOS	Project Trips	Agency or Agencies with Jurisdiction	Most Restrictive LOS Standard
West Cerritos Avenue						
9	West Cerritos Avenue, Beach Boulevard to Dale Avenue	14,000 LOS A	14,070 LOS A	70	City of Stanton	LOS D (City of Stanton's LOS for non-CMP roads)
Dale Avenue						
10	Dale Avenue, West Cerritos Avenue to Katella Avenue	12,000 LOS A	12,169 LOS A	169	City of Stanton	LOS D (City of Stanton's LOS for non-CMP roads)
Katella Avenue						
11	Katella Avenue, Beach Boulevard to Dale Avenue	26,000 LOS A	26,124 LOS A	124	OCTA[1], City of Stanton	LOS E (City of Stanton's LOS for CMP roads)
12	Katella Avenue, Dale Avenue to Magnolia Avenue	25,000 LOS A	25,013 LOS A	13	OCTA[1], City of Stanton, City of Garden Grove[1], Orange County[1]	LOS E (City of Stanton's LOS for CMP roads)
13	Katella Avenue, Magnolia Avenue to Gilbert Street	26,000 LOS A	26,013 LOS A	13	OCTA[1], Orange County[1], City of Garden Grove[1]	NA (All LOS standards apply to intersections)
14	Katella Avenue, Gilbert Street to Barclay Drive	29,000 LOS A	29,013 LOS A	13	OCTA[1], Orange County[1], City of Garden Grove[1]	NA (All LOS standards apply to intersections)
15	Katella Avenue, Barclay Drive to Euclid Street	28,000 LOS A	28,013 LOS A	13	OCTA[1], Orange County[1], City of Anaheim[1], City of Garden Grove[1]	NA (All LOS standards apply to intersections)
16	Katella Avenue, Euclid Street to 9th Street	32,000 LOS A	32,013 LOS A	13	OCTA[1], City of Anaheim[1]	NA (All LOS standards apply to intersections)

No.	Road Segment	Existing ADT and LOS	Peak Construction ADT and LOS	Project Trips	Agency or Agencies with Jurisdiction	Most Restrictive LOS Standard
17	Katella Avenue, 9th Street to Walnut Street	29,000 LOS A	29,013 LOS A	13	OCTA[1], City of Anaheim[1]	NA (All LOS standards apply to intersections)
18	Katella Avenue, Walnut Street to Anaheim Way	39,000 LOS B	39,013 LOS B	13	OCTA[1], City of Anaheim[1]	NA (All LOS standards apply to intersections)

Sources: Caltrans Traffic Data Branch, OCTA
[1]This agency's LOS standards only apply to intersections, not road segments.

The first road segment that would not meet LOS standards is Beach Boulevard between SR-22 and Lampson Avenue. It currently operates at LOS E and would continue to operate at LOS E during peak construction. A very small portion of this road segment falls within the city of Westminster, which has an LOS standard of "D" for intersections and roadways. This is the most restrictive LOS standard governing this road segment. Because this road segment is already operating at LOS E, worse than the city of Westminster's LOS goal of "D", and because project construction traffic would not degrade the LOS further, this impact is not significant, and staff does not consider the LOS E conditions of this road segment during peak construction to be inconsistent with city of Westminster LORS. Furthermore, peak construction traffic impacts are temporary, and once the project is operational, it would only add a negligible number of occasional maintenance-related trips to this road segment. Finally, it should be noted that most of the road segment is located in the city of Stanton, which has an LOS standard of "E" for CMP roadways, including Beach Boulevard. This segment of Beach Boulevard between SR-22 and Lampson Avenue would meet the city of Stanton's LOS E standard during peak construction.

The other road segment that would not meet LOS standards during peak construction is the segment of Beach Boulevard between Lampson Avenue and Chapman Avenue. It currently operates at LOS F and would continue to operate at LOS F during peak construction. This segment does not currently and would not during peak construction meet the city of Stanton's applicable minimum LOS standard of "E" or better for CMP roadways.

OCTA requires that CMP highway system intersections maintain an LOS grade of "E" or better, unless the baseline is lower than "E", in which case, the intersection capacity utilization rating cannot increase by more than 0.10 (OCTA 2015). Because this road segment is in the CMP highway system and because its existing baseline is lower than "E", staff used OCTA's threshold to determine the significance of traffic impacts to this road segment, even though OCTA's threshold applies to intersections, not road segments. During peak construction, this road segment's volume to capacity (V/C) ratio would increase by approximately 0.0017 over existing conditions, less than the 0.10 threshold for impacts. Therefore, construction traffic impacts to the segment of Beach Boulevard between Lampson Avenue and Chapman Avenue would be less than significant. Staff does not consider the LOS F conditions of this road segment during

peak construction to be inconsistent with city of Stanton LOS standards, given that: the road segment already operates at LOS F; project construction traffic would only slightly increase the V/C ratio of this road segment; and project construction traffic is temporary.

Several road segments have no applicable minimum LOS standard, as the LOS standards only apply to intersections. These road segments are Beach Boulevard between Ball Road and Lincoln Avenue, and all the study road segments on Katella Avenue between Magnolia Avenue and Anaheim Way. Impacts to traffic LOS are also less than significant on these road segments. Beach Boulevard between Ball Road and Lincoln Avenue currently operates at LOS D and would continue to do so during peak construction, so the project would not significantly degrade traffic flow on this road segment. The study road segments on Katella Avenue between Magnolia Avenue and Anaheim Way all currently operate smoothly at LOS A or LOS B and would continue to do so during peak construction. Only 13 one-way daily trips would be added to each of these Katella Avenue Road segments.

Traffic and Transportation Table 4, below, shows the existing intersection capacity utilization ratio and LOS at study intersections during the morning and evening peak hours. Turning movement counts are not available for these local intersections, so peak construction LOS cannot be calculated. The most restrictive LOS standard applicable to any of the intersections is LOS D, and all intersections currently operate at a baseline LOS better than "D" except for the Beach Boulevard/Bolsa Avenue intersection, which currently operates at LOS D during the morning peak hour. The increase in traffic at this intersection during peak construction (22 daily peak hour one-way trips) would not be sufficiently large to downgrade the LOS D conditions to LOS F. The increase in traffic during peak construction also would not be sufficient to cause unacceptable LOS at other study intersections, which currently operate at relatively high levels of service. Peak construction impacts to traffic LOS at intersections would be less than significant.

Traffic and Transportation Table 4
2015 Peak Hour Intersection LOS and Project-Added Trips

No.	Study Intersection	Year 2015 AM/PM Peak Hour Intersection Capacity Utilization and LOS		Project Added Trips	Jurisdiction	Most Restrictive LOS Standard
		AM	PM			
1	Beach Boulevard/Edinger Avenue/I-405 Southbound Ramp	0.67 LOS B	0.76 LOS C	21	OCTA, City of Huntington Beach	LOS E (OCTA and City of Huntington Beach)
2	Beach Boulevard/Bolsa Avenue	0.82 LOS D	0.78 LOS C	22	OCTA, City of Westminster	LOS D (City of Westminster)
3	Beach Boulevard/SR-22 Eastbound Ramp	0.55 LOS A	0.51 LOS A	48	OCTA, City of Westminster	LOS D (City of Westminster)

No.	Study Intersection	Year 2015 AM/PM Peak Hour Intersection Capacity Utilization and LOS		Project Added Trips	Jurisdiction	Most Restrictive LOS Standard
4	Beach Boulevard/SR-22 Westbound Off Ramp	0.73 LOS C	0.69 LOS B	48	OCTA, City of Garden Grove	LOS D (City of Garden Grove)
5	Beach Boulevard/Katella Avenue	0.71 LOS C	0.68 LOS B	48	OCTA, City of Stanton	LOS E (OCTA, City of Stanton)
6	Beach Boulevard/SR-91 Eastbound Ramp	0.47 LOS A	0.55 LOS A	23	OCTA, City of Buena Park	LOS E (OCTA, City of Buena Park)
7	Beach Boulevard/SR-91 Westbound Ramp	0.51 LOS A	0.59 LOS A	21	OCTA, City of Buena Park	LOS E (OCTA, City of Buena Park)
8	Beach Boulevard/ I-5 Southbound Ramps	0.61 LOS B	0.65 LOS B	14	OCTA, City of Buena Park	LOS E (OCTA, City of Buena Park)

Source: 2015 Orange County Congestion Management Program

As discussed above, the Stanton project would cause less than significant impacts to traffic LOS on nearby study roads and intersections.

Prior to publication of the Final Staff Assessment (FSA), the applicant submitted traffic information for soil import and export activities taking place during the first three months of construction, prior to the peak construction period (SERC 2018). Although this period of import/export activities would generate more total daily construction traffic than the peak construction activities analyzed above (152.5 roundtrips compared to 103.5 roundtrips), this increase in daily trips would not be large enough to change the LOS analysis discussed above. This is especially true given that AM or PM peak hour trips would be lower for the import/export period than for peak construction (49 one-way trips during each peak hour compared to 78 one-way trips), meaning that many trips during the import/export period would be spread throughout the day. This minimizes LOS impacts. Therefore, the LOS analysis discussed above is still applicable, and impacts to traffic LOS would remain less than significant.

Road Hazards from Construction Traffic

Although project-related traffic would cause less than significant impacts to traffic LOS, it could potentially cause other impacts, such as hazardous road damage from heavy haul construction vehicles. The potential for road damage can be minimized if heavy haul vehicles use designated truck routes. The applicant has stated the project owner's intent to comply with truck route regulations by using Beach Boulevard and Katella Boulevard, both designated truck routes, to access the site.

Staff has proposed Conditions of Certification **TRANS-1** and **TRANS-2**, which would ensure compliance by requiring heavy haul vehicles to use designated truck routes wherever possible. **TRANS-1** also requires that the project owner comply with applicable jurisdictions' regulations on vehicle sizes and weights and driver licensing, both to comply with LORS and to reduce the risk of any hazards posed by oversized vehicles or unlicensed drivers. Finally, staff has also proposed Condition of Certification **TRANS-3**, which would require the project owner to restore all public roads, easements, and rights-of-way damaged by project-related traffic. With implementation of Conditions of Certification **TRANS-1** through **TRANS-3**, project-related traffic would cause less than significant impacts to roads.

PARKING IMPACTS

During construction of Stanton, a temporary 2.89-acre off-site construction worker parking area would be provided at the Bethel Romanian Pentecostal Church, 350 feet south of the Parcel 1 entrance along Dale Avenue. Section 20.320.050 of the Stanton Municipal Code states that off-site parking must be located within 300 feet of the property requiring parking spaces and shall not be available for any other uses. The off-site parking is more than 300 feet away from the project and is available for the church's use. However, this regulation is interpreted to pertain to permanent, operational parking, not temporary construction parking. In a letter city of Stanton representatives wrote discussing their review of the proposed project, they were supportive of the project and did not state that parking was an issue (COS 2016a).

During peak construction, the proposed project would require parking for approximately 66 construction worker vehicles. Using a standard of 350 square feet needed for each parking space, approximately 0.53 acre would be needed for construction worker parking, less than the 2.89 acres of parking provided. Therefore, the construction parking area at the church would accommodate all construction worker vehicles. Routine operation of the plant would be performed remotely, so only a few spaces would be needed during operation for occasional maintenance visits. The applicant stated that adequate onsite parking would be provided for operation-related activities (SERC 2016a, page 5.12-18). To ensure that adequate parking is provided, Condition of Certification **TRANS-2** requires the project owner to provide final parking plans as part of the Traffic Control Plan (TCP). Because the project would provide adequate parking, there would be no impacts to the surrounding area from project parking spill-over.

LINEAR FACILITIES IMPACTS

The project applicant proposes construction of a natural gas pipeline along Dale Avenue that would pass through multiple jurisdictions. Local agencies require encroachment permits for construction activities located in road rights-of-way. The applicant has stated the project owner's intent to comply with encroachment permit regulations. To ensure compliance, staff is recommending implementation of Condition of Certification **TRANS-4**, which would require the project owner to obtain the necessary encroachment permits for construction work and activities within road rights-of-way. In addition, Condition of Certification **TRANS-3** would require the project owner to restore all public roads, easements, and rights-of-way damaged by project-related construction activities. Finally, Condition of Certification **TRANS-2** requires that the TCP include plans for access to adjacent properties during construction of the linear facilities to minimize

traffic disruption. Implementation of these conditions would ensure that construction activities in road rights-of-way would not cause significant impacts to road safety or traffic flow.

HAZARDOUS MATERIALS AND WASTE TRANSPORTATION IMPACTS

Both the construction and operation of Stanton would involve transportation of hazardous materials and wastes. The applicant has stated in the AFC the project owner's intent to comply with federal and state regulations governing these activities. To ensure compliance, staff has proposed Condition of Certification **TRANS-5**, which requires the project owner to comply with applicable regulations and to contract with licensed hazardous materials delivery and waste hauler companies. Compliance with applicable hazardous materials and waste regulations would result in less than significant impacts to roadways and the public from hazardous materials and waste transportation. See the **Hazardous Materials Management** and **Waste Management** sections of this document for more information.

RAIL SERVICE IMPACTS

The UPRR's Stanton Industrial Lead, which provides limited freight service, is adjacent to the southern boundary of the project site and has an at-grade crossing at Dale Avenue. Construction workers would cross these tracks while walking between the off-site parking area at the Bethel Romanian Pentecostal Church and the project site. Construction vehicles traveling northbound on Dale Avenue to access the site or southbound on Dale Avenue to leave the site would also cross these tracks. In addition, construction workers and vehicles at the project site could potentially work near the railroad tracks.

The Dale Avenue rail crossing has warning signs, including a round yellow advance warning sign, pavement markings visible to drivers, crossing gates, and flashing crossbucks. However, as rail crossings are inherent hazards, and this crossing could pose a safety hazard to construction workers, oversized vehicles, and trains, staff is proposing Condition of Certification **TRANS-6**. This condition would require the project owner to develop and implement a rail crossing safety plan for construction to address foot traffic, construction-related vehicles, and the transport of heavy/oversized loads over the UPRR railroad tracks, as well as safety measures to be employed during construction near the railroad tracks.

UPRR submitted a comment letter dated May 15, 2017 detailing their concerns about the project (UPRR 2017a). UPRR stated that unmitigated high voltage power in close proximity to the railroad tracks could have an adverse effect on railroad signals, and that ground fault events could adversely affect railroad equipment. Conditions of certification in the **Transmission System Engineering** section of this document, specifically Condition of Certification **TSE-5**, would ensure that these adverse impacts would not occur. This condition requires that the project comply with California Public Utilities Commission (CPUC) General Order 95 (GO-95), *Rules for* Overhead *Electric Line Construction*, CPUC General Order 128 (GO-128), *Rules for Construction of Underground* Electric Supply *and Communications Systems*, and The National Electric Safety Code, 1999. Please see the **Transmission System Engineering**

section for more details.

UPRR also discussed in their letter the potential need for additional mitigation measures to protect the railroad and ensure safety. As discussed earlier, staff is proposing Condition of Certification **TRANS-6** to require implementation of a rail crossing safety plan to reduce the chance of any conflicts between construction activities and railroad operations.

Staff has attempted to contact UPRR several times to discuss their comments, but there have been no replies.

BUS SERVICE IMPACTS

The Orange County Transportation Authority (OCTA) provides bus service within Orange County, including the city of Stanton. Near the proposed project site there are seven operating bus lines. The ones nearest the project site operate on Beach Boulevard (Route 39) and Katella Avenue (Route 50), local roadways construction traffic would use to access the project site (OCTA 2017). National bus service is provided by Greyhound Lines, which has a station in Anaheim (GH 2016). In addition, the Robert M. Pyles Elementary School is located approximately 0.25 miles from the Stanton project site, and school bus service may pass near the site. There are no bus lines directly serving the proposed project site.

The project would add traffic to Beach Boulevard and Katella Avenue, where bus lines operate, but project traffic would not cause significant impacts to traffic LOS, as discussed earlier. Therefore, the project would not significantly delay bus service. Impacts to bus service would be less than significant.

BICYCLE AND PEDESTRIAN FACILITIES IMPACTS

There are currently no bicycle facilities on the study roadways near the project site, although the City of Stanton General Plan identifies proposed Class II bike facilities[3] on Cerritos Avenue and Dale Avenue near the project site (COS 2008, page 5-7). A representative from OCTA submitted a letter identifying this bike network along Dale Avenue and recommending implementation of mitigation measures to reduce potential disruptions to bicycle facilities (OCTA 2017a). However, a representative from the city of Stanton submitted a comment letter clarifying that while there are planned bike lanes for Dale Avenue, no such facilities currently exist and no funds are currently allocated for these facilities. He stated that as a result, the city of Stanton does not believe that any mitigation measures need to be incorporated into the Stanton license related to future bike lanes on Dale Avenue (COS 2017a). Because there are no bike lanes on study roadways in the vicinity of the project site, and because no aspect of the project would interfere with the development of future bike lanes, the project would cause no impacts to bicycle facilities.

The nearest pedestrian facilities are sidewalks located directly east of the Stanton Parcel 1 entrance along Dale Avenue and north of the Parcel 2 entrance on Fern

[3] Class II bike facilities consist of an on-street lane for bikes separated from vehicular traffic by striping.

Avenue and Pacific Street. Construction and operation of the project would not impact pedestrian activities or facilities, as it would not block any sidewalks, and most traffic would not go directly through residential areas or any other areas with high pedestrian activity.

AVIATION IMPACTS

Airports in the vicinity of the proposed project site are Los Alamitos Army Airfield (LAAA) and Fullerton Municipal Airport (FMA). The following aviation analysis focuses on these airports. The airport closest to the project site, and therefore most likely to be affected by the proposed project's thermal plumes and physical height, which could pose hazards to aircraft operations, is LAAA. See **Traffic and Transportation Figure 1 – Regional Traffic and Transportation Setting** for the locations of these airports.

Airports

LAAA is a military airport located approximately 2.9 miles southwest of the Stanton site. There are two runways: Runway (RY) 4Right (R) and 22Left (L), which is the longest runway at 7,999 feet long and 200 feet wide; and RY 4L and 22R, which is 5,901 feet long and 150 feet wide (AIRNAV 2016b). The left-hand traffic pattern altitudes are 1,000 feet above ground level (AGL) and 1,500 feet AGL for general aircraft depending on which runway is used. The helicopter traffic pattern is 800 feet AGL. Operations from LAAA average 48 an hour, with a peak of 60 an hour (CEC 2017h).

Another nearby airport is FMA, which is approximately 4.5 miles north of the project site. It is a public airport owned by the city of Fullerton and has one runway that is 3,121 feet long and 75 feet wide. FMA is home to approximately 238 aircraft: 208 single-engine, 17 multi-engine, 1 jet, and 12 helicopter aircraft. Aircraft operations average 172 flights per day. Operations are approximately 67 percent local general aviation and 33 percent transient general aviation. The pattern altitude of the FMA is 1,100 feet above mean sea level (MSL) (AIRNAV 2016b).

Aviation Impacts

To assess Stanton's aviation impacts, staff examined whether the project's two 70-foot-tall exhaust stack enclosures or its thermal plumes could obstruct or impair airspace, posing hazards to aircraft pilots and passengers.

Exhaust Stack Enclosures - Physical Obstruction of Airspace

Title 14, Part 77.9 of the Code of Federal Regulations requires Federal Aviation Administration (FAA) notification for any construction or alteration of navigable airspace exceeding 200 feet AGL. It also requires notification for construction or alterations within 20,000 feet of an airport with a runway more than 3,200 feet in length if the height of the construction or alteration exceeds a slope of 100 to 1 extending outward and upward from the nearest point of the nearest runway of the airport. No project structures exceed 200 feet. However, because the Stanton site is within 20,000 feet of the LAAA, and because the longest runway at LAAA is more than 3,200 feet in length, the FAA would require notification if a project feature exceeds the FAA's threshold slope height. The Stanton project site is approximately 2.9 miles, or approximately 15,300 feet from the LAAA, meaning that the threshold for FAA notification is approximately 153 feet. The

tallest structures at the project site would be the two 70-foot-tall exhaust stack enclosures, which are lower than 153 feet and would not penetrate LAAA's navigable airspace. Therefore, the project owner is not required to file FAA Form 7460-1 for Stanton.

FMA is 4.5 miles north of the project site and RY 6/24 is only 3,121 feet long; therefore Title 14 of the Code of Federal Regulations, Part 77.9 does not apply. The applicant submitted to staff an Obstruction Evaluation and Airspace Analysis for the project, which was consistent with staff's conclusion that no FAA notification is required (SERC 2016i).

If any construction equipment used for the project, such as a construction crane, is 153 feet AGL or taller, Form 7460-1 would need to be filed with the FAA. Staff proposes Condition of Certification **TRANS-7** to ensure FAA notification under these circumstances. Given the temporary use and relatively small size of construction cranes, it is likely the FAA would issue a Determination of No Hazard to Navigable Airspace for the use of this equipment. However, the FAA might require lighting and/or marking of a construction crane exceeding 153 feet AGL as a condition of their Determination. Condition of Certification **TRANS-7** requires that the project owner comply with any FAA Determination conditions, including lighting or marking requirements. With implementation of **TRANS-7**, project compliance with FAA regulations would be verified, and its physical structures would not constitute a hazard to air navigation.

Thermal Plumes

Stanton's two combustion turbine generator (CTG) stacks would discharge thermal plumes, high-velocity columns of hot air, during operation. Thermal plume velocities would be greatest at the discharge points, with plume velocities decreasing with increasing altitude. Plume velocities would also be highest during certain weather conditions, such as cool temperatures and calm winds. High velocity thermal plumes have the potential to affect aviation safety, and the FAA has amended the Aeronautical Information Manual to establish thermal plumes as potential flight hazards (FAA 2015a). Aircraft flying through thermal plumes may experience significant air disturbances, such as turbulence and vertical shear. The FAA manual advises that, when able, a pilot should fly upwind of smokestacks and cooling towers to avoid encountering thermal plumes.

Staff uses a peak vertical plume velocity of 10.6 meters per second (m/s) (5.3 m/s average plume velocity) as a screening threshold for potential impacts to aviation. Based on a literature search, this velocity generally defines the point at which aircraft begin to experience severe turbulence. See **Appendix TT-1** (**Plume Threshold Determination**) for references supporting the use of 10.6 m/s as a screening threshold.

Energy Commission Air Quality staff modeled plume velocity for the project's CTG stacks to determine whether the project's thermal plumes would exceed 10.6 m/s peak velocity at altitudes where aircraft could fly. Air Quality staff found that thermal plume peak vertical velocity would exceed 10.6 m/s up to an altitude of approximately 450 feet AGL under the worst-case scenario of cool temperature/calm wind conditions. It should be noted that calm winds occur approximately only 0.14 percent of the time at the

project site. During typical conditions, winds would help to dissipate the plume, resulting in a lower velocity plume at 450 feet AGL and other altitudes than the calculated velocities for the worst-case, higher velocity plume that would occur during calm winds. Refer to **Appendix TT-2** (**Thermal Plume Velocity Analysis**) for a complete explanation of the method used to estimate worst-case vertical plume velocities.

Title 14, Section 91.119 of the Code of Federal Regulations states that unless necessary for takeoff or landing, the minimum safe altitudes for aircraft are 500 feet AGL for non-congested areas and 1,000 feet AGL for congested areas, although helicopters may be operated lower (USG 2017). Therefore, enroute aircraft in the area of the project site should not be flying lower than 500 feet AGL and would not be expected to encounter the potential worst-case plume at 450 feet AGL or below. It is possible that aircraft operating under visual flight rules (VFR) entering or exiting the traffic pattern at the LAAA could be flying at altitudes low enough to pass through the worst-case plume, however. The Obstruction Evaluation and Airspace Analysis submitted by the applicant shows that the project site lies within the VFR traffic pattern airspace of the LAAA, where aircraft could allowably operate at altitudes below 450 feet AGL, although such low altitude overflight of the project site would be uncommon, given the site's distance from the airport (SERC 2016i, page 4 of Attachment DA5.12-2). Flight tracking provided by the FAA to staff for a two-week period in June 2017 supports the rarity of low altitude flights over the site. The tracking results show only a few low-flying aircraft (0 to 400 feet AGL) in the general area and no low-flying aircraft over the site (FAA 2017a).

Given the remote chance of a low-altitude overflight coinciding with both operation of the plant and the rare weather conditions (cool temperatures and calm winds) that would create the worst-case plume (exceeding the 10.6 m/s peak velocity threshold at altitudes up to 450 feet AGL), impacts to aviation would be less than significant. Aircraft are unlikely to fly as low as 450 feet AGL over the site, and the vast majority of the time, the project site would be subject to wind and warm weather conditions, meaning that the plume would exceed the peak velocity threshold of 10.6 m/s at altitudes even lower than 450 feet AGL. Aircraft would not be expected to fly this close to the ground. However, as a conservative precautionary measure, staff recommends implementation of Condition of Certification **TRANS-8**, which would require the project owner to work with the FAA, the LAAA Manager, and the FMA Manager to notify all pilots using these airports and the airspace near the Stanton 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) about the plume; working with the LAAA and FMA managers to add a remark about the plume to the Automatic Terminal Information Service (ATIS) and the Chart Supplement (formerly called the Airport Facility Directory) for each airport; and updating the Los Angeles Sectional Chart to indicate that pilots should avoid direct overflight of the project when possible. Condition of Certification **TRANS-8** is consistent with the FAA's amended Aeronautical Information Manual, discussed earlier in this section, which advises pilots to fly upwind of sources of exhaust plumes when possible (FAA 2015a). Although plume impacts would be less than significant with no mitigation, this condition would further reduce the chance of any rare encounters between aircraft and high velocity thermal plumes.

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).

For cumulative traffic impacts, staff reviewed **Executive Summary Table 1 – SERC Master Cumulative Projects List** and **Executive Summary Figure 1 – Cumulative Projects**. The timing of these cumulative projects varies and is often uncertain. A few of these projects could potentially generate construction or operation traffic simultaneously with Stanton's peak construction trips, but these trips would be distributed over the extensive roadway network in the area and would not be expected to combine with the project's small and less than significant contribution to traffic during the period of peak construction (when Stanton would generate the maximum number of vehicle trips) to create cumulative impacts. Stanton would be remotely operated and would only generate occasional trips during operation, so there would also be no significant cumulative impacts during operation of the project. Cumulative impacts to traffic LOS would be less than significant.

Stanton also would not cause significant cumulative impacts to aviation. As discussed earlier, the project would create high-velocity thermal plumes that would exceed a peak velocity of 10.6 m/s, and could impact aviation safety, at altitudes up to 450 feet AGL under unusual worst-case weather conditions of cool weather and calm winds, which rarely occur in the project area. Plume impacts to aircraft would be less than significant, as the chance of a low altitude overflight coinciding with the generation of worst-case thermal plumes would be very low.

Stanton is located immediately west of the SCE Barre Peaker Power Plant along Dale Avenue between West Cerritos Avenue and Katella Avenue. The SCE peaker has an approximately 80-foot-tall exhaust stack (SCE 2015) and also produces a thermal plume, although the height of the plume is unknown. The FAA recommends in the Aeronautical Information Manual that pilots avoid potential thermal plumes by flying upwind of smokestacks and cooling towers when possible (FAA 2015a), so pilots should already be avoiding overflight of this area nearby. It would be reasonable for pilots to avoid overflight of the adjacent Stanton site in accordance with the FAA's guidance, given the close proximity of the two power plant sites and that pilots can take routes that do not overfly the power plants. Condition of Certification **TRANS-8**, which staff proposes as a conservative precautionary measure, would involve notification to pilots of Stanton's plumes with an advisory to avoid overflight. This condition of certification would likely further discourage pilots from flying over the entire area, including the SCE Barre Peaker Power Plant, and would further reduce the potential for any cumulative impacts to aviation. The addition of the project's thermal plume to the area would cause less than significant cumulative impacts to aviation for these reasons.

COMPLIANCE WITH LORS

Traffic and Transportation Table 5 provides a summary of SERC's compliance with applicable LORS pertaining to traffic and transportation, as discussed earlier in this subsection.

Traffic and Transportation Table 5
Project Consistency with Applicable Traffic and Transportation LORS

Applicable Law	Consistency Determination	Basis for Consistency
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. Consistency is ensured with implementation of **TRANS-5**.	**TRANS-5** requires the project owner to contract with licensed hazardous materials delivery and waste hauler companies for the transport of hazardous materials and wastes. It also requires the project owner to ensure compliance with all applicable regulations and to implement the proper procedures.
Title 14, Part 77, Section 77.9: Requires notification of the FAA of any construction or alterations exceeding 200 feet above ground level. Also requires FAA notification of any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.	Consistent. Consistency is ensured with implementation of **TRANS-7**.	There are no permanent project structures that require FAA notification. In the case that any construction equipment, such as a crane, exceeds the threshold notification height, **TRANS-7** ensures compliance by requiring FAA notification.
California Vehicle Code		
Divisions 2, 6, 12, 13, 14, 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.	Consistent. Consistency is ensured with implementation of **TRANS-1** and **TRANS-5**.	**TRANS-1** requires the project owner to comply with limitations imposed by the relevant jurisdictions on vehicle sizes and weights, driver licensing, and truck routes. **TRANS-5** requires the project owner to contract with licensed hazardous materials delivery and waste hauler companies for the transportation of hazardous materials and wastes. It also requires the project owner to ensure compliance with all applicable regulations and to implement the proper procedures.

Applicable Law	Consistency Determination	Basis for Consistency
California Streets and Highway Code		
Division 1, Chapter 1, Article 3, Section 117; Division 1, Chapter 3; Division 2, Chapters 5.5 and 6: Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits for construction in the right-of-way.	Consistent. Consistency is ensured with implementation of **TRANS-4**.	**TRANS-4** requires the project owner to coordinate with all applicable jurisdictions to obtain necessary encroachment permits and comply with all applicable regulations.
California Health and Safety Code		
Section 25160 et seq.: Pertains to operators of vehicles transporting hazardous materials; promotes safe transportation of hazardous materials.	Consistent. Consistency is ensured with implementation of **TRANS-5**.	**TRANS-5** requires the project owner to contract with licensed hazardous materials delivery and waste hauler companies for the transport of hazardous materials and wastes. It also requires the project owner to ensure compliance with all applicable regulations and to implement the proper procedures.
Orange County Congestion Management Program (CMP)		
Requires traffic impact analysis for development projects generating 2,400 or more daily trips for projects adjacent to the CMP Highway System, and 1,600 or more daily trips for projects that directly access the CMP Highway System (page 41). Requires CMP highway system intersections to maintain an LOS grade of “E” or better, unless the baseline is lower than “E”, in which case, the intersection capacity utilization rating cannot increase by more than 0.10 (pages 6-7,9).	Consistent.	The project-added construction traffic would not degrade project intersections to LOS “E” or worse. Also, the project generates less than 2,400 daily trips and does not require traffic impact analysis per the CMP.
Orange County Code		
Section 6-1-2: Requires a permit for construction in the rights-of-way.	Consistent. Consistency is ensured with implementation of **TRANS-4**.	**TRANS-4** would ensure consistency with this regulation by requiring the project owner to obtain the necessary encroachment permits and comply with all applicable regulations.

Applicable Law	Consistency Determination	Basis for Consistency
City of Stanton 2008 General Plan Infrastructure & Community Services Element		
Infrastructure & Community Services Element, Action ICS-1.1.2 (d): Maintain LOS D or better on city streets and LOS E or better for CMP or Smart Street roadways. Smart Streets include Beach Blvd and Katella Avenue.	Consistent.	The segment of Beach Boulevard between Lampson Avenue and Chapman Avenue, partially located in the city of Stanton, currently operates at LOS F and would continue to operate at LOS F during peak construction. This segment does not currently and would not during peak construction meet the city of Stanton's applicable minimum LOS standard of "E" or better for CMP roadways. Staff does not consider the LOS F conditions of this road segment during peak construction to be inconsistent with city of Stanton LORS, given that the road segment already operates at LOS F, and given that peak construction traffic would only increase the V/C of the road segment by 0.0017, less than the 0.10 threshold for impacts. Also, this minimal project-generated construction traffic is temporary. Operation would only generate occasional trips, as SERC would be operated remotely.
City of Stanton Municipal Code		
Section 10.04.060: Requires commercial vehicles over five tons, including load, to use designated truck routes (including Katella Avenue and Beach Boulevard).	Consistent. Consistency is ensured with implementation of **TRANS-1** and **TRANS-2**.	**TRANS-1** and **TRANS-2** ensure compliance by requiring the project owner to comply with applicable jurisdictions' limitations on truck routes and to use truck routes wherever possible.
Section 12.04.010: Requires permits to conduct construction activities within city rights-of-way.	Consistent. Consistency is ensured with implementation of **TRANS-4**.	**TRANS-4** would ensure that the project owner obtain the necessary encroachment permits and comply with all applicable regulations.
City of Anaheim 2004 General Plan Circulation Element		
Goal 2.1 Maintain efficient traffic operations on city streets and maintain a peak hour level of service not worse than LOS "D" at street intersections.	Consistent.	There are no study intersections within the city of Anaheim. However, all road segments located within the city of Anaheim would operate at LOS D or better during peak construction.

Applicable Law	Consistency Determination	Basis for Consistency
City of Anaheim Municipal Code		
Section 12.12.010: Requires permits to conduct construction activities within city rights-of-way, including obstructions and repairs.	Consistent. Consistency is ensured with implementation of **TRANS-4**.	**TRANS-4** ensures compliance by requiring that the project owner obtain the necessary encroachment permits and comply with all applicable regulations.
Section 14.48.050: Requires vehicles over three tons to use designated truck routes (including Beach Boulevard, Lincoln Avenue, Ball Road, Katella Avenue, and La Palma Avenue).	Consistent. Consistency is ensured with implementation of **TRANS-1** and **TRANS-2**.	**TRANS-1** and **TRANS-2** require the project owner to comply with applicable jurisdictions' limitations on truck routes and to use truck routes wherever possible.
Section 14.52.010: Requires issuance of a permit for the movement or operation of vehicles, equipment, or load on Anaheim highways with weight or size exceeding the maximum permitted by the California Vehicle Code.	Consistent. Consistency is ensured with implementation of **TRANS-1**.	**TRANS-1** ensures compliance by requiring that the project owner comply with the applicable jurisdictions' limitations on vehicles sizes and weights and driver licensing.
City of Buena Park 2010 General Plan Mobility Element		
Policy M-5.2: Maintain a citywide level of service not to exceed LOS D for intersections during peak hours. (The Circulation Element notes that this applies to non-CMP intersections. CMP intersections have an LOS standard of LOS E).	Consistent.	All study intersections within the city of Buena Park would operate at an LOS better than "D" during peak construction.
Policy M-5.3: Maintain a citywide level of service for roadway segments not to exceed LOS D for daily traffic.	Consistent.	All study roadways within the city of Buena Park would operate at LOS D or better during peak construction.
City of Buena Park Municipal Code		
Section 10.36.010: Establishes truck routes for vehicles exceeding three tons in weight.	Consistent. Consistency is ensured with implementation of **TRANS-1** and **TRANS-2**.	**TRANS-1** and **TRANS-2** require the project owner to comply with applicable jurisdictions' limitations on truck routes and to use truck routes whenever possible.
Chapter 12.08: Requires permits to conduct construction activities within the city's right-of-way.	Consistent. Consistency is ensured with implementation of **TRANS-4**.	**TRANS-4** ensures compliance by requiring that the project owner obtain the necessary encroachment permits and comply with all applicable regulations.
City of Garden Grove 2030 General Plan Circulation Element		
Policy CIR-1.2: Encourage a goal of LOS D or better for arterial intersections under the jurisdiction of Garden Grove.	Consistent.	The study intersection located in Garden Grove operates at an LOS better than LOS D.

Applicable Law	Consistency Determination	Basis for Consistency
Policy CIR- 1.3: Strive to achieve a minimum traffic LOS “D” throughout the city, except for major development areas at those intersections that are impacted by factors beyond the city’s control or at intersections included in the deficient intersection list.	Consistent.	The study intersection located in Garden Grove operates at an LOS better than LOS D.
City of Garden Grove Municipal Code		
Section 10.40.030: Establishes truck routes for vehicles exceeding three tons in weight.	Consistent. Consistency is ensured with implementation of **TRANS-1** and **TRANS-2**.	**TRANS-1** and **TRANS-2** ensure compliance by requiring the project owner to comply with applicable jurisdictions’ limitations on truck routes and to use truck routes wherever possible.
Section 11.04.190: Requires a permit to conduct construction in or under the surface of any street or sidewalk within the city.	Consistent. Consistency is ensured with implementation of **TRANS-4**.	**TRANS-4** ensures compliance by requiring that the project owner obtain the necessary encroachment permits and comply with all applicable regulations.
City of Westminster 2016 General Plan Mobility Element		
M-1.3 Level of Service: Maintain an LOS D for vehicles at intersections and roadways when vehicles are considered a prioritized mode of travel.	Consistent.	All study intersections in the city of Westminster would operate at LOS D or better during peak construction. The study road segment of Beach Boulevard between SR 22 and Lampson Avenue currently operates at LOS E, and would continue to operate at LOS E during peak construction. A very small portion of this road segment falls within the city of Westminster. Because this road segment is already operating at LOS E, worse than the city of Westminster’s LOS goal of “D”, and because project construction traffic would not degrade the LOS further, this impact is not significant, and staff does not consider the LOS E conditions of this road segment during peak construction to be inconsistent with city of Westminster LORS. Furthermore, peak construction traffic impacts are temporary, and during operation, the project would only add occasional maintenance-related trips to this road segment.

Applicable Law	Consistency Determination	Basis for Consistency
Orange County 2005 General Plan		
Policy 3.2: Ensure that all intersections within the unincorporated portion of Orange County maintain a peak hour LOS of "D", according to the County Growth Management Plan Transportation Implementation Manual.	Consistent.	There are no study intersections located in unincorporated Orange County. However, the study road segments located in unincorporated Orange County would operate at LOS better than "D" during peak construction.
2013 City of Huntington Beach Circulation Element		
The lowest acceptable performance for CMP intersections is LOS E.	Consistent.	The study intersection located in the city of Huntington Beach would operate at an LOS better than LOS E during peak construction.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

The following is a summary of comments received regarding the Traffic and Transportation section, along with staff's responses.

Scott Galati, Counsel to SERC, LLC, TN 223179, April 11, 2018:

Comment 1: *Allow a secondary delivery route for hazardous materials other than ammonia to facilitate access to the rear of the site. The proposed secondary delivery route is from Beach Boulevard to Pacific Street to the rear of the Stanton site.*

Response: As discussed with the applicant during the April 18th Stanton PSA Workshop, a secondary access route for access to the rear of the site is acceptable. However, the applicant's proposed secondary access route would involve delivery vehicles headed southbound on Beach Boulevard making an unprotected left-turn across busy northbound Beach Boulevard onto Pacific Street. For this reason, staff proposed that the secondary access route should be from Beach Boulevard to Cerritos Avenue to Fern Avenue[4]. The applicant agreed with the change at the workshop.

Staff modified **TRANS-2** to include discussion of the alternate route in the traffic control plan.

4 Mr. Allan Rigg, the Public Works Director for the City of Stanton, also stated that he preferred the Cerritos route during a phone discussion with staff (CEC 2018g).

Scott Galati, Counsel to SERC, LLC, TN 223293, April 30, 2018

Comment 1: *Modify Condition of Certification **TRANS-2** to delete the requirement for flaggers to assist construction workers in crossing the railroad. This is not required by any LORS, is not a mitigation for a significant impact, and is not necessary given the train's infrequent service and the presence of automated crossing signals.*

Response: Staff agrees and deleted the requirement for flaggers.

Staff attempted to contact Union Pacific Railroad several times to discuss the proposed modification to the condition and to confirm that train service is infrequent. However, staff has received no response. Regardless, train service would be expected to be infrequent on an industrial lead, and the automated crossing arms are sufficient for warning of the train's approach.

Comment 2: *For the same reasons listed above, delete the requirement in **TRANS-6** for flaggers to assist construction workers in crossing the railroad.*

Response: Staff agrees for the reasons listed in the response to Comment #1 (above) and has deleted the requirement.

ENVIRONMENTAL JUSTICE

Environmental Justice Figures 1 and 2 and Table 3 show the presence of an environmental justice (EJ) population based on race, ethnicity, and income within a six-mile radius of the project site. An impact to bus transit, pedestrian facilities, or bicycle facilities can cause disproportionate impacts to EJ communities, as low-income residents more often use these modes of transportation. Staff concludes that with mitigation, construction and operation of Stanton would not cause significant adverse direct, indirect, or cumulative traffic and transportation impacts on the general population including the EJ population. Stanton would have a less than significant impact on bus transit, pedestrian accessibility, and bicycle facilities. Thus, the project would not disproportionately affect the EJ population.

CONCLUSIONS AND RECOMMENDATIONS

Staff has analyzed the proposed project's impacts to the nearby traffic and transportation system. As currently proposed, the construction of Stanton could result in significant impacts to the nearby traffic and transportation system. However, staff has determined that with implementation of the proposed conditions of certification, impacts from the project 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 to ensure that the project's traffic disruptions would be minimized. Condition of Certification **TRANS-3** would reduce road hazards by requiring restoration of any public roads, easements, rights-of-way, and other transportation infrastructure damaged by project-related construction or traffic. Finally, Condition of Certification **TRANS-6** would require implementation of a rail crossing safety plan to ensure safety of construction workers and train operators.

With implementation of the proposed conditions of certification (**TRANS-1** through **TRANS-8**), Stanton would comply with all applicable LORS related to traffic and transportation and would result in less than significant direct, indirect, and cumulative impacts to the traffic and transportation system and to 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 cities of Stanton, Anaheim, Buena Park, Garden Grove, and Westminster, and the county of Orange, 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

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 city of Stanton in the preparation and implementation of the TCP. The project owner shall submit the proposed TCP to the city 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, with heavy haul trucks using truck routes wherever possible;
- Any alternate routes used for non-bulk hazardous materials delivery, including the Beach Boulevard to Cerritos Avenue to Fern Avenue route that would allow the project owner to make deliveries more easily to the rear of the project site;
- Parking/Staging Plan (PSP) for project construction and operation. The PSP must comply with the city of Stanton's parking regulations;
- Placement of necessary signage, lighting, and traffic control devices at the project construction site, including locations of linear facilities construction, and the worker parking site;

- Means of access for emergency vehicles to the project site;
- Location and details of construction along affected roadways at night where permitted;
- Means of maintaining access to adjacent residential and commercial property during the construction of linear facilities in or near the right-of-way;
- Details regarding temporary closure of travel lanes or disruptions to street segments and intersections during construction activities;
- Plan for advance notification to residents, businesses, emergency providers, and hospitals that would be affected when roads may be partially or completely closed.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the TCP to the city of Stanton 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 city of Stanton 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 city of Stanton or any other interested agencies, along with any changes to the TCP, for CPM review and approval. After CPM review and approval, the project owner shall provide completed copies of the final TCP to the city of Stanton and any other interested agencies, sending copies of the correspondence to the CPM.

TRANS-3 RESTORATION OF ALL PUBLIC ROADS, EASEMENTS, AND RIGHTS-OF-WAY

The project owner shall restore all public roads, easements, rights-of-way, and any other transportation infrastructure damaged due to project-related construction and traffic. Restoration shall be completed in a timely manner to the infrastructure's original condition. Restoration of significant damage which could cause hazards (such as potholes, deterioration of pavement edges, or damaged signage) shall take place immediately after the damage has occurred.

Prior to the start of site mobilization, the project owner shall notify the relevant agencies, including the city of Stanton, county of Orange, Caltrans District 12, and any jurisdictions affected by construction of the linear facilities, 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 roads and intersections along the major routes construction vehicles would take in the vicinity of the project site. The project owner shall provide the videotapes or other recorded visual media to the CPM.

If damage to any public road, easement, or right-of-way occurs during construction, 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 of the repairs with which the project owner must comply, unless approval for a schedule change is provided by the CPM. Following completion of any repairs, the project owner shall provide the CPM with letters signed by the affected agency/agencies stating their satisfaction with the repairs.

TRANS-4 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 shall coordinate with all applicable jurisdictions, including the city of Stanton, to obtain necessary encroachment permits and comply with all applicable regulations, including applicable road standards.

Verification: At least 10 days prior to ground disturbance, improvements, or interruption of traffic in or along any public road, easement, or right-of-way, the project owner shall provide copies to the CPM of all permits received from any affected jurisdictions. In addition, the project owner shall retain copies of the issued permits and supporting documentation in its compliance file for a minimum of 180 calendar days after the start of commercial operation.

TRANS-5 TRANSPORTATION OF HAZARDOUS MATERIALS

The project owner shall contract with licensed hazardous 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 MCRs during construction and the Annual Reports during operation, the owner shall provide the names of the contracted hazardous materials delivery and waste hauler companies used, as well as licensing verification. Licensing verification only needs to be included in the MCRs when a new company is used. If a company's licensing verification has already been submitted in an MCR, it is not necessary to submit it again. Licensing verification must be included in all Annual Reports, even if the company has already been used.

TRANS-6 RAIL CROSSING SAFETY PLAN

Prior to any construction-related ground disturbance, the project owner shall develop and implement a rail crossing safety plan for construction that addresses construction-related pedestrian activity (including workers walking between the parking area and the site or working at the site), construction vehicles, and heavy/oversize loads.

Verification: At least 60 calendar days prior to the start of construction-related ground disturbance, the project owner shall submit the rail crossing safety plan to the city of Stanton and Union Pacific Railroad (UPRR) 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 letters to the city of Stanton and UPRR requesting review and comment.

At least 30 calendar days prior to the start of construction-related ground disturbance, the project owner shall provide copies of any comment letters received from the city of Stanton and UPRR, along with any changes to the rail crossing safety plan, for CPM review and approval. After CPM review and approval, the project owner shall provide completed copies of the final rail crossing safety plan to the city of Stanton and UPRR, sending copies of the correspondence to the CPM.

TRANS-7 FAA NOTIFICATION FOR CONSTRUCTION EQUIPMENT AT OR EXCEEDING 153 FEET AGL

The project owner or its contractor(s) shall file Federal Aviation Administration (FAA) Form 7460-1, Notice of Proposed Construction or Alteration, with the FAA for any construction equipment 153 feet above ground level (AGL) or taller. The project owner shall comply with any conditions imposed by the FAA as part of their hazard determination, such as marking and lighting requirements.

Verification: At least 30 days prior to the presence onsite of any construction equipment 153 feet AGL or taller, the project owner shall submit to the CPM a copy of the FAA's hazard determination.

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 FAA requesting a Notice to Airmen (NOTAM) be issued advising pilots of the location of the power plant and recommending avoidance of overflight. The letter shall also request that the NOTAM be maintained in active status until the applicable navigational charts and Chart Supplements (formerly called the Airport Facility Directory) 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 Los Alamitos Army Airfield (LAAA) Manager and Fullerton Municipal Airport (FMA) Manager to add new remarks to the Automatic Terminal Information Service (ATIS) and to the Chart Supplements for LAAA and FMA. The remarks shall identify the location of the power plant and advise pilots to avoid direct overflight as they approach or depart the 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 LAAA Manager, and the FMA Manager. 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 LAAA Manager, and the FMA Manager. 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, the LAAA Manager, or the FMA Manager does not respond within 30 days, the project owner shall contact the CPM.

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APPENDIX TT-1
PLUME THRESHOLD DETERMINATION

Andrea Koch

INTRODUCTION

A plume velocity analysis involves calculating the altitude at which a plume would have an average velocity exceeding a threshold of significance; planes flying through the plume at this point or below could experience turbulence threatening aircraft control. 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 has concluded that based on recent publications, an average vertical velocity of 4.3 m/s is no longer 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 now be considered 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 "[a]viation 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 has been unable to verify the source of the threshold (TRB 2014, page 55).

REVISED PLUME THRESHOLD

For the reasons described below, staff has concluded that the appropriate threshold to use to determine potential impacts from thermal plumes to aircraft is a peak vertical velocity of 10.6 m/s.

The FAA-sponsored "Guidebook for Energy Facilities Compatibility with Airports and Airspace" 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.

Plume Threshold Determination Table 1 is a modified version of Table 10.1 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	Rhythmic 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,

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.

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.

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APPENDIX TT-2
THERMAL PLUME VELOCITY ANALYSIS

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

INTRODUCTION

On October 26, 2016, Stanton Energy Reliability Center, IIL (SERC, LLC) submitted an Application for Certification (AFC) to the Energy Commission to construct and operate a hybrid electrical generating and storage facility. The following provides an assessment of the two Stanton Energy Reliability Center (SERC) gas turbine exhaust stacks plume vertical velocities based on the proposed equipment parameters. Staff completed calculations to determine the worst-case vertical plume velocities at different heights above the stacks based on the applicant-provided data for their design. The purpose of this analysis is to provide documentation of the method used to estimate worst-case vertical plume velocities using the Spillane approach. The results reported in this analysis are based on the significance thresholds of a plume peak vertical velocity of 10.6 meters per second (m/s) and an average plume velocity of 5.3 m/s.

PROJECT DESCRIPTION

The Stanton project would consist of two GE LM6000 PC-based Electric Gas Turbines (EGTs). Each EGT would consist of a GE LM6000 PC SPRINT natural gas-fired, simple-cycle combustion turbine and an integrated 10-megawatt (MW) GE Battery Energy Storage System (BESS). There are no other thermal plume sources at the project site.

PLUME VELOCITY CALCULATION METHOD

Staff has selected a calculation approach from a technical paper (Best 2003) to estimate the worst-case plume vertical velocities for the project's thermal plumes. 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 (in meters/second [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 exit (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)

Individual plumes can be broken into three stages. The first stage describes plume conditions close to the stack exit where the plume momentum remains relatively unaffected by ambient and plume buoyancy conditions. This momentum rise stage describes the plume as it travels to a height of 6.25D. In the second stage, the plume responds to differences between ambient and plume buoyancy conditions. Cooler and less turbulent ambient air interacts with the plume and impacts the plume's vertical velocity. The dilution of the stack exhaust is sensitive to ambient wind speed. Therefore the calm wind conditions are considered to be conservative and yield worst case conditions. In the third stage, the plume rise is largely impacted by the buoyancy of the plume and continues until turbulence within and outside the plume equalizes. This generally takes place at large heights and distances from the stack where the plume vertical velocity is close to zero.

Equation (1) is solved for V at any given height above stack exit 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 stack exit (height above the ground was used in the following calculations by adding the stack height to height above the stack exit); the peak plume velocity would be two times higher than the plume-average velocity predicted by this equation. As can be seen, the stack buoyancy flux is a prominent part of Equation (1). The calm condition calculation basis clearly represents the worst-case conditions, and the vertical velocity will decrease substantially as wind speed increases. For multiple stack plumes, where the stacks are equivalent, the multiple stack plume velocity during calm winds was calculated by staff in a simplified fashion, presented in the Best Paper as follows:

(5) $V_m = V_{sp} * N^{0.25}$

Where: V_m = multiple stack combined plume vertical velocity (m/s)
V_{sp} = single plume vertical velocity (m/s), calculated using Equation (1)
N = number of stacks

Staff notes that this simplified multiple stack plume velocity calculation method predicts somewhat lower vertical velocity values than the full Spillane approach methodology for multiple plumes as given in data results presented in the Best paper (Best 2003).

VERTICAL PLUME VELOCITY ANALYSIS

GAS TURBINE DESIGN AND OPERATING PARAMETERS

The design and operating parameter data for the gas turbines stack exhausts are provided in **Plume Velocity Table 1**. This includes 100 percent loads for three ambient temperatures: 40°F (cold winter day), 102.7°F (hot summer day), and 65°F (annual average conditions). The operating condition that resulted in the highest calculated buoyancy fluxes at each temperature was used to calculate vertical plume velocities.

Plume Velocity Table 1
SERC Gas Turbine Operating and Exhaust Parameters

Operating Mode	Cold	Annual Average	Hot
Ambient Temp (°F)	40	65	102.7
Stack Height (feet)	70.7	70.7	70.7
Stack Diameter (feet)	12.04	12.04	12.04
Distance Between Stacks (feet)	231	231	231
Stack Temp (°F)	827	839	848
Stack Velocity (ft/sec)	90.8	88.9	87.2

Source: SERC 2016b, SERC 2016i

For this plume source the cold ambient condition (40°F) for gas turbines at 100 percent load was found to be the worst-case velocity condition. However, the likelihood of operating a peaking facility under this ambient temperature is low. Therefore the annual average condition (65°F) was determined to be the most representative operating condition.

PLUME VELOCITY CALCULATION RESULTS

Using the Spillane calculation approach, the plume average vertical velocities at different heights above ground was determined by staff for calm conditions. SERC has two turbine stacks with a space of 70.42 meters or 231 feet (center-to-center). When the spacing between the turbine stacks is not large enough, the exhaust plumes may spread enough to significantly merge prior to the velocity lowering to vertical velocities below levels of concern. Therefore, the gas turbine plume size and vertical velocities for different plume merging scenarios, where the value N is equal to the number of fully merged plumes, were calculated and results are presented in **Plume Velocity Table 2.**

The values shown in **Plume Velocity Table 2** are worst-case values for 100 percent load operation at average ambient temperatures (65°F), with dead calm wind conditions from ground level to the height of the 5.3 m/s vertical velocities. As explained in the **Traffic and Transportation** section, a plume average vertical velocity of 5.3 meters per second (m/s), which is equivalent to a peak plume velocity of 10.6 m/s, has been determined by staff to be the critical velocity of concern to light aircraft. Vertical velocities below this level are not of concern to light aircraft.

The gas turbine plume average velocity is calculated to drop below 5.3 m/s at a height of approximately 450 feet for the single turbine plume (N=1). The plume diameter at this height is around 34.32 m, which is less than the distance between two adjacent turbine stacks (70.42 m). Therefore two adjacent turbine plumes have not begun merging at this height. The two plumes begin merging at the height of 821 feet and become fully merged at the height of 1,543 feet. When they are fully merged, the average velocity is calculated to be 3.91 m/s, which has already dropped below 5.3 m/s. Therefore staff concludes that gas turbine plume average velocity drops below 5.3 m/s at the height of 450 feet above ground.

Plume Velocity Table 2
SERC Gas Turbine Plume Size and Vertical Plume Velocities

Height (ft)	Plume Diameter (m) [a]	Average Plume Velocity (m/s) [b]	
		N=1	N=2
300	19.692	6.48	Not Merged
400	29.445	5.60	Not Merged
500	39.199	5.06	Not Merged
600	48.953	4.69	Not Merged
700	58.706	4.41	Not Merged
800	68.460	4.19	Not Merged
900	78.214	4.00	Not Merged
1000	87.968	3.85	Not Merged
1100	97.721	3.72	Not Merged
1200	107.475	3.60	Not Merged
1300	117.229	3.50	Not Merged
1400	126.982	3.40	Not Merged
1500	136.736	3.32	Not Merged
1600	146.490	3.24	3.86
1700	156.244	3.18	3.78
1800	165.997	3.11	3.70
1900	175.751	3.05	3.63
2000	185.505	3.00	3.57

WIND SPEED STATISTICS

Since the “Spillane approach” used by staff is limited to calm wind conditions, the frequency of calm wind conditions occurring at the project site needs to be evaluated. Calm wind statistics data are not needed for input for the plume modeling itself. However, these data are useful in evaluating the likelihood of having calm wind conditions at the proposed project site.

Wind roses and wind frequency distribution data collected from the Anaheim monitoring station were considered representative for the project site. The applicant provides the calm wind speed statistics for Anaheim station from ground-level meteorological data collected for 2008 through 2012. Calm winds for the purposes of the reported monitoring station statistics are those hours with average wind speeds below 1 knot (equal to 0.5 m/s). Calm or very low wind speeds can also occur for shorter periods of time within each of the monitored average hourly conditions. However, the shortest time resolution for the available meteorological data is one hour. The annual wind rose data shows calm/low wind speed conditions averaging an hour or longer is 0.14 percent in the site area. Calm conditions/low wind speeds are not frequent in the site area but they do occur, which is the condition most favorable for the formation of higher vertical velocity thermal plumes from gas turbine stacks. Therefore, the “Spillane approach” staff used above is appropriate and very conservative for the plume velocity analysis at the project site.

CONCLUSIONS

The calculated worst case calm wind condition vertical plume average velocities from the Stanton gas turbine stacks are predicted to drop below 5.3 m/s (equivalent to a peak speed of 10.6 m/s) at heights at around 450 feet above ground level at annual average ambient temperature condition.

The vertical velocity from the equipment exhaust at a given height above the stack decreases as wind speed increases. However, the plume average vertical velocities for the stacks will remain elevated during calm or very low wind speed conditions. Although calm or very low wind speed conditions are not frequent in the site area, they do occur and give a conservative estimate of the plume velocities. Additionally, shorter periods of dead calm winds, lasting long enough to increase the vertical plume average velocity height up to its peak height, can also occur during hours with low average wind speeds.

REFERENCES

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SERC 2016i – CH2M/Applicant Consultant (TN 215097). Stanton Energy Reliability Center Application for Certification Data Adequacy Supplement, dated December

TRAFFIC AND TRANSPORTATION - FIGURE 1

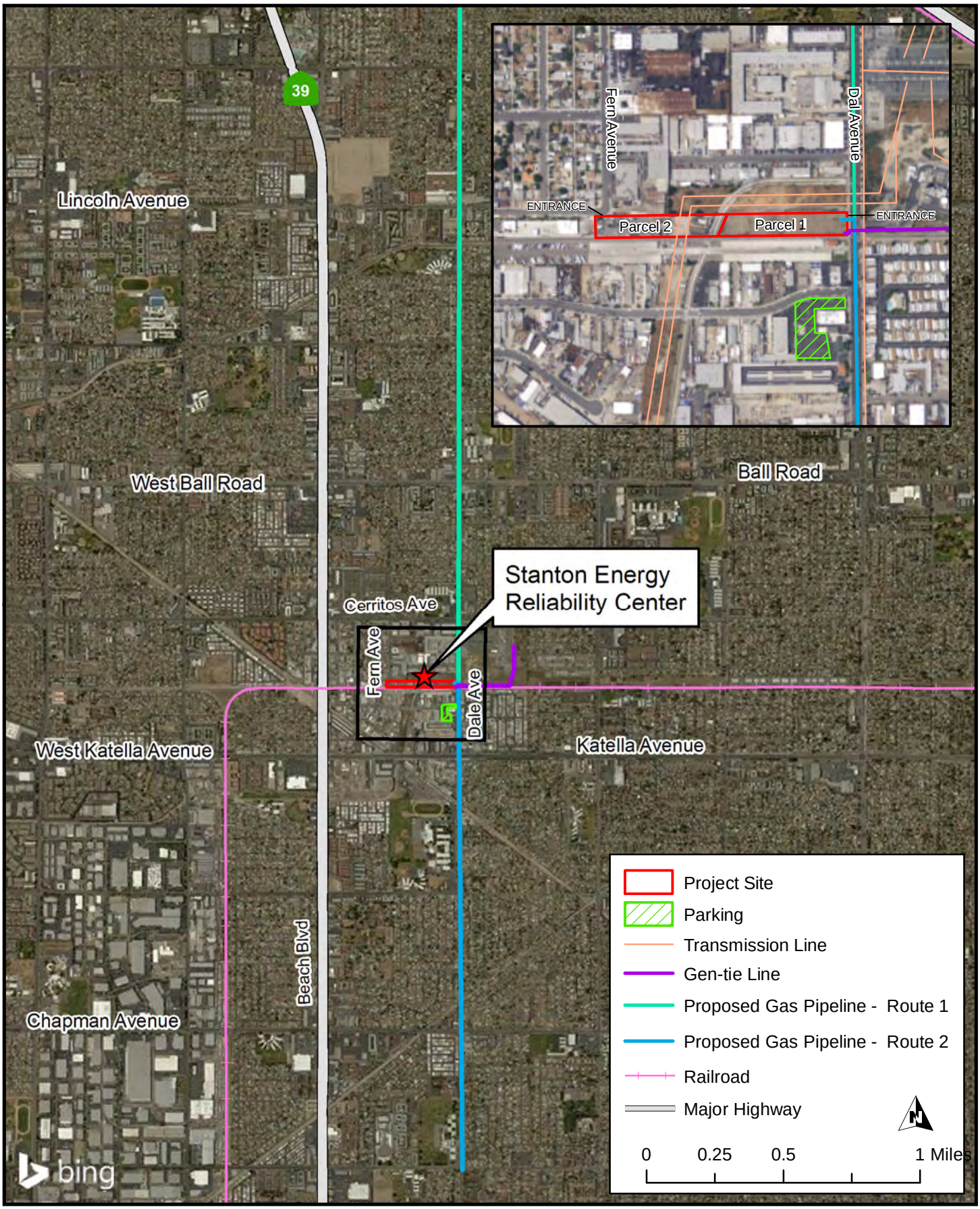
Stanton Energy Reliability Center - Regional Traffic and Transportation Setting

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Open Street Map, ESRI World Imagery, California Department of Transportation

TRAFFIC AND TRANSPORTATION - FIGURE 2

Stanton Energy Reliability Center - Local Traffic and Transportation Setting

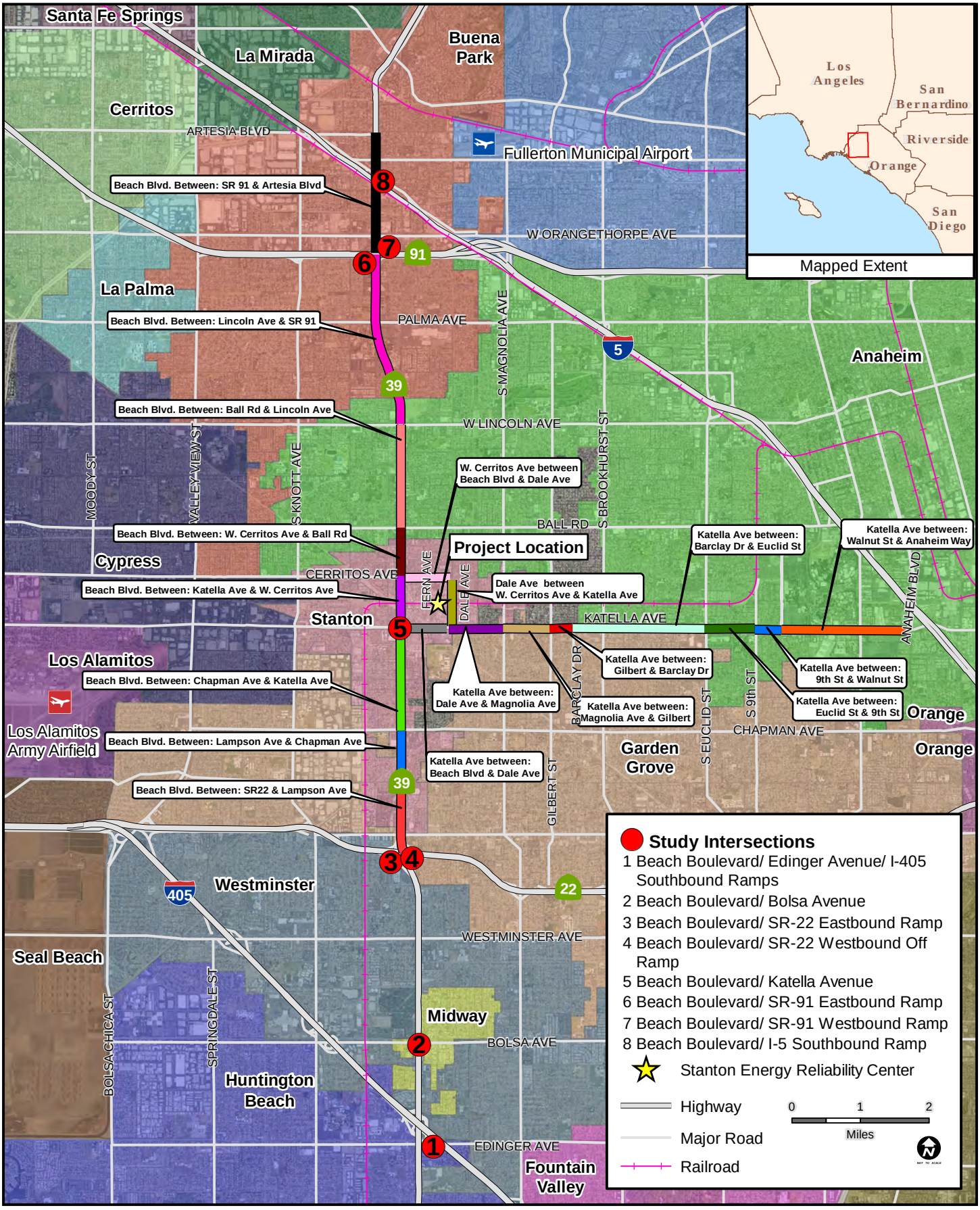


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Open Street Map, ESRI World Street Map, California Department of Transportation

TRAFFIC AND TRANSPORTATION - FIGURE 3

Stanton Energy Reliability Center - Study Roadways and Intersections



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI Imagery, Open Street Map, California Department of Transportation

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The applicant, Stanton Energy Reliability Center LLC, proposes to build a new underground 0.35-mile, single-circuit 66-kilovolt (kV) transmission line to connect the proposed Stanton Energy Reliability Center (Stanton or project) to the area's electric power grid through the existing Southern California Edison (SCE's) Barre Substation to the east. The proposed project's location is 10711 Dale Avenue in the city of Stanton, Orange County, California and, according to the applicant, was chosen in part for its proximity to this substation. This generator-tie line would be routed underground through a mostly industrial area with only a few residences in the immediate vicinity thereby minimizing the potential for residential field exposures which have been of some health concern. Since the line would be operated within the SCE service area, it would be designed, constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards (LORS). Staff proposes two conditions of certification to ensure compliance.

INTRODUCTION

The purpose of this Final Staff Assessment (FSA) is to assess the transmission line design and operational plan for the proposed Stanton 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.

The line as proposed would run underground as it stretches from the project's switchyard to the Barre Substation and would be owned and operated by SCE. The proposed location was chosen because of its close location to the SCE Barre Substation to which it would be connected.

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 transmission lines. 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	SERC 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 will be located underground and would therefore not pose an aviation hazard on the basis of height above ground.
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.** Since the proposed is an underground line, it would not pose an aviation hazard and the applicant will therefore not be required 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.** Underground lines do not generate electric fields which are responsible for above-ground radio-frequency impacts.

Applicable LORS	Description	SERC Consistency
Aviation Safety		
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 66-kV transmission line according to the requirements of CPUC's GO-52. Condition of Certification **TLSN-1** would ensure compliance.
Hazardous and Nuisance Shocks		
State		
California Public Utilities Commission (CPUC) General Order 128 (GO-128), "Rules Governing Underground Electric Supply and Communication System Construction"	GO-128 for undergrounding formulates the requirements and standards to promote and safeguard public health and safety.	**Compliant.** he project owner intends to construct the line according to requirements of GO-128. Condition of Certification **TLSN-1** would ensure 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.** The project owner intends construction to minimize the risk of hazardous shocks. Conditions of Certification **TLSN-1** and **TLSN-2** would 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-2** 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 field reduction.	**Compliant.** The project owner intends to submit proof of compliance with CPUC GO-131-D and GO-128 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 field-reducing guidelines for similar underground SCE lines in the service area. Condition of Certification **TLSN-1** would allow the line to be designed accordingly.

Applicable LORS	Description	SERC Consistency
Aviation Safety		
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 field reduction policy established through CPUC Decision D.93-11-013. This would be accomplished through the requirements of **TLSN-1.**
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 line would be located underground and would not require above-ground safety clearances.

SETTING AND EXISTING CONDITIONS

The proposed 98-megawatt (MW) Stanton Energy Reliability Center would be located on two land parcels totaling 3.97 acres at 10711 Dale Avenue in the city of Stanton, Orange County, California. The site is partly paved over, zoned for industrial uses, and one of the parcels presently used for vehicle storage. The generated electric power would be transmitted to the area power grid using a generator tie-line. Since the area is zoned for industrial uses there would be no residences in the immediate vicinity.

PROJECT DESCRIPTION

The proposed Stanton transmission line would be a single-circuit underground 66-kV gen-tie line 0.35 mile long and extending to connect the on-site switchyard to SCE's Barre Substation (SERC 2016a, p. 3.1). The entire line would be located underground. From the on-site connecting point forward to the Barre Substation, the line would be owned and operated by SCE with the conductors inserted into their underground casing as they extend to the connection points at the Barre Substation. The line would be designed and constructed in accordance with California Public Utilities Commission (CPUC) General Order 128 (GO-128) "Rules for Construction of Underground Electric Supply and Commission Systems", and other safety codes and standards (SERC 2016a, p. 3-8 through 3-11).

From the on-site connecting point, the line would specifically run east, crossing underneath Dale Avenue and running parallel to the Union Pacific Railway along the boundary of the Barre Substation property, and would further extend northeast to the connection point at the substation.

The absence of residences in the immediate vicinity of the route should minimize the health-based concern about residential exposure to electric and magnetic fields. Only the magnetic field component would be encountered at ground level since electric fields are unable to penetrate through the soil to the surface from underground.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Aviation Safety

Since the proposed line is an underground line, no part would extend into the air and the project would not pose a risk to aviation safety. Staff does not recommend any aviation-related condition of certification.

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. Since (a) the proposed line is an underground line and (b) electric fields are unable to penetrate the soil to the surface, only the magnetic field would be encountered at and above ground level. See further discussion of magnetic field issues below.

Audible Noise

Since noise-producing electric fields would be absent along the proposed underground line, there would be no noise anywhere along the proposed route.

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. Since the proposed line is an underground line, there would be no contact between the conductors and combustible materials meaning that there would be no fire hazard during operations.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead and underground power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

Potentially hazardous shocks could result from electrical faults from the new project equipment, the generator tie-line, or the SCE high-voltage transmission system. The new underground 66-kV generator tie-line would be designed in accordance with applicable LORS. Implementing the GO-128-related measures against direct contact with the energized line would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields. Since only the magnetic field component is able to penetrate the soil from its underground location, only magnetic fields would be able to produce the nuisance shocks of concern.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead and underground 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 magnetic field-related 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 along the proposed route. Staff recommends Condition of Certification **TLSN-2** to ensure such grounding for Stanton.

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. Since only the magnetic field is able to penetrate the soil to the ground level, only the magnetic field could be encountered at ground level during operation. Since the conductors of modern underground lines are placed together for maximal field cancellation (without affecting safety), underground by itself is considered to yield the weakest fields possible without affecting safety. It is for this that staff considers it unnecessary to require further field reduction measures when the line proposed line is an underground line.

Electric Fields

Electric fields around overhead 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. Since the proposed line is an underground line, electric field impacts are not expected at ground level.

Magnetic Fields

Magnetic fields around overhead transmission lines are produced when electric current (measured in amperes) flows. Magnetic fields are measured in units of gauss (G) or tesla (T). Unlike electric fields, magnetic fields as noted, are unable to penetrate the soil and other materials and 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 exposure 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 only when such reduction is without any effect on 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 or underground 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 as noted would penetrate the soil, buildings, and other materials to produce the types of long-term 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 and placement 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 the soil-penetrating magnetic field component along the route. Since field strengths could be reduced by reducing the spacing between conductors, undergrounding as previously noted is used for optimum field strength reduction in ways that balance the need for field reduction with the need for line safety, efficiency and reliability and the line safety. Effective balancing of both needs is achieved through compliance with GO-128. Staff does not recommend further mitigation or field strength measurements when there is a requirement for compliance with GO-128 as in **TLSN-1**. GO-128 specifies the design guidelines applicable for underground lines of the voltage class and utility service area at issue.

CUMULATIVE IMPACTS

Operating any given project may lead to significant adverse cumulative impacts when its effects are 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 project-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.

COMPLIANCE WITH LORS

As previously noted, current health-risk-driven CPUC policy on EMF management requires that any high-voltage overhead or underground line within a given area is designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in the case of Stanton is SCE. Since the proposed project's underground 66-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.

RESPONSE TO COMMENTS

Staff has received no comments on the transmission line nuisance and safety aspects of the proposed Stanton project line.

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 Stanton project 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 magnetic field impacts since only the magnetic field component would be encountered during operation. Since the line would be designed and operated according to existing SCE guidelines for underground lines, 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

Stanton Energy Reliability Center construction and operation, including the one new single-circuit 66-kilovolt (kV) underground transmission line to connect the proposed project to SCE's transmission system, is not expected to result in significant changes in magnetic fields. Since the electric fields are unable to penetrate the soil, the noted electric fields such as corona, corona levels, audible noise, nuisance shocks or television impacts, would not occur. As an underground line, the line would not pose a collision 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 for underground lines. Undergrounding produces the weakest fields possible without affecting line safety and the possibility of fires.

Since magnetic field health effects have neither been established nor ruled out for the proposed project and similar underground 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 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 underground 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 two recommended conditions of certification, any such impacts would be less than significant.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed 66-kV underground transmission line according to the requirements of California Public Utility Commission's GO-128, 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 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 submit to the compliance project manager (CPM) a letter signed by a California registered electrical engineer affirming compliance with this condition.

REFERENCES

EPRI – Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and Above.

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification, Vol. I dated October 26, Submitted to CEC Docket Unit October 27 2016.

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World Health Organization (WHO), *Electromagnetic fields (EMF)*, <http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>

VISUAL RESOURCES

Testimony of Scott Polaske

SUMMARY OF CONCLUSIONS

The proposed Stanton Energy Reliability Center (Stanton 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. Overall the project, as proposed, was determined to have a less than significant impact on visual resources.

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 are visible. Visual resources also include "sensitive viewing areas," which are areas consisting of uses such as residential, recreational, travel routes, tourist destinations, and the people within those use areas who are "sensitive viewers." This analysis focuses on whether Stanton would cause significant adverse visual impacts and whether the project would be in conformance with applicable LORS.

Staff evaluated 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]). Staff determined there to be a less than significant impact to visual resources at each of the identified KOPs.

Visual Resources Appendix-1 (VR Appendix-1), following the Visual Resources analysis, describes visual resources terms, definitions, and analysis methods, along with Energy Commission staff's methodology used in this analysis. 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 local LORS pertaining to aesthetics or preservation and protection of sensitive visual resources applicable to the proposed project.

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 city of Stanton General Plan and Municipal Code.

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

Applicable LORS	
City of Stanton General Plan	
Goal RC-3.1	Clean and safe air quality.
Action RC-3.1.2 (c)	Protect sensitive receptors by creating an urban tree-planting program to plant trees that remove pollutants from the air or provide shade that decreases the negative impacts of heat on the air.
Goal CD-3.1	Provide both residents and visitors with a “sense of arrival” upon their entrance into Stanton.
Strategy CD-3.1.1	Develop and maintain gateways at major entries into the city.
Action CD-3.1.1 (a)	Develop a comprehensive gateway design and improvement program for both primary and secondary city gateways.
Action CD-3.1.1 (b)	Create unifying landscape and architectural themes at primary and secondary gateways.
Street Tree Master Plan	Tree-planting program to encourage street trees within the city.
City of Stanton Municipal Code	
Chapter 12.20 Street Tree Plan	This chapter describes requirements for planting, removing, or replacing trees within the public right-of-way.
20.315.040 Landscape Standards	This section discusses standards for landscaping for projects in nonresidential zones including area requirements and planting type and size.
20.315.050 Irrigation Plans and Water Conservation Standards	This section establishes water-efficient landscape standards that are at least as effective as the State Model Water-Efficient Landscape Ordinance (MWELO) as required by the Water Conservation in Landscaping Act (Government Code Sections 65591 et seq.).
20.300.080 Outdoor Lighting and Glare	This section establishes outdoor lighting standards in order to reduce the impacts of glare, light trespass, over lighting, sky glow, and poorly shielded or inappropriately directed lighting fixtures, and promote safety and encourage energy conservation.

PROJECT DESCRIPTION

The following description of major visual features is taken from the application for certification (AFC) project description. **Visual Resources Figure 1** displays architectural elevations of the proposed power plant. **Visual Resources Figure 2** outlines the proposed transmission line, water line, and gas line route. All figures referred to in the text may be found at the end of this section of the staff assessment.

POWER PLANT

Visual Resources Figure 4 and **Visual Resources Figure 5** display the general arrangement of the proposed power plant site. The project would include two GE LM6000 PG combustion turbine generators (CTGs) and associated features as listed in **Visual Resources Table 2**. The enclosures for the gas turbine equipment and exhaust stack would be constructed using a prefabricated panel system, using flat or slightly pebbled finish, metal panels. The color palette concept includes medium and light beige/tan (desert sand and almond), and medium and dark gray (slate and charcoal), with a medium blue accent color. Functioning analog clocks would be surface mounted near the top of the medium tan colored tower, and blue colored horizontal bands would accent upper portions of safety railings, enclosing an upper 42-inch-wide maintenance platform and decorative lower platform. A blue band along the top of the gas turbine facility enclosure would echo the narrower blue bands on the tower. Additional aesthetic treatment of the gas turbine enclosure includes a broad horizontal band of light beige above a dark gray (charcoal) base. Near the center, a tall rectangular area of light gray bisects the north and south walls of the enclosure.

LANDSCAPING

The project's Conceptual Landscape Plan (**Visual Resources Figure 11a**) incorporates a combination of evergreen trees, medium size shrubs, and ornamental grasses. The landscaping would enhance the site's appearance and partially screen new fencing and structures. The Stanton Conceptual Landscape Plan Specifications (**Visual Resources Figure 11b**) lists the species, size, and quantity of plants used in the overall conceptual plan. The suggested plant palette includes drought tolerant species that would be appropriate to the regional setting and local site conditions.

LINEAR FACILITIES

Visual Resources Figure 2 delineates the proposed transmission line (generator tie-line) and gas line route. The gas line of the proposed project would be entirely underground. The generator tie-line would be installed completely underground from the last structure in the Skip substation all the way to the tubular steel pole structure located in the Barre substation (SERC 2018n). Stanton would use water supplied by Golden State Water Company via water supply pipelines located in Dale Avenue and/or Pacific Street. Once tapped into the existing water supply, the pipeline would not be visible.

Visual Resources Table 2
Summary of Major Publicly Visible Structures

Feature	Length (feet)	Width (feet)	Height (feet)	Diameter (feet)	Color	Materials	Finish
Gas turbine facility enclosure (2)	139	65	35	—	Almond Slate gray	Metal panel	Flat/lightly pebbled
					Charcoal gray		
					Medium blue		
Exhaust stack enclosure (2)	11.5 to 15	11.5 to 15	70	—	Desert sand Medium blue	Metal panel	Flat/lightly pebbled
Gas turbine VBV duct – primarily enclosed, with only top portion visible (2)	7	7	43	—	Gray	Metal	Flat/untextured
Power distribution module (2)	33	12	17	—	Gray	Metal	Flat/untextured
Control module (2)	25	12	17	—	Gray	Metal	Flat/untextured
Fuel gas compressor	36	17	15	—	Gray	Metal	Galvanized
Switchyard takeoff structure(2)	32	1	30	—	Gray	Metal	Flat/untextured
Demineralized water tank	—	—	30	24	Desert sand	Metal	Flat/untextured
Storm water detention tank	—	—	30	28	Desert sand	Metal	Flat/untextured
Battery energy storage (2)	62	19	12	—	Desert sand	Metal panel	Flat/untextured
Warehouse	40	40	15	—	Desert sand	Metal panel	Flat/untextured

EXISTING PROJECT VISUAL SETTING

REGIONAL SETTING

Visual Resources Figure 3 shows the regional setting of the proposed Stanton project site. The project site is located within a highly urbanized portion of Orange County in the city of Stanton, which is approximately 4.5 miles southwest of Anaheim, 20 miles southeast of Los Angeles, and approximately 8 miles from the Pacific Ocean. The city of Stanton lies within the Los Angeles Basin, an urbanized area comprising flat and gently sloping terrain situated at elevations ranging from close to sea level to approximately 250 feet above sea level. Regional topography features include the Coyote Hills, with a high point located approximately 13 miles away and rising to elevation approximately 4,000 feet above sea level. The Santa Ana Mountains generally define the eastern edge of the Los Angeles Basin and in clear weather conditions can be seen in the back drop from places within the project vicinity.

The vegetation native to this area comprises a mixture of annual grassland, coast live oak woodland, and scrub but is currently dominated by non-native, ornamental species. The local landscape vegetation pattern is characteristic of urban development.

Located in the northern portion of the city of Stanton, the site is situated along Dale Avenue, between West Cerritos and Katella Avenues, in a mixed use area consisting primarily of industrial and commercial development. The site lies almost immediately west of Southern California Edison's (SCE's) Barre Substation and Barre Peaker Plant. A Union Pacific Railroad track is adjacent on the south, and, to the north, the site is bordered by a 150-foot wide SCE high-voltage transmission right-of-way with steel lattice towers and wood power poles. Industrial and commercial development characterized by one- and two-story buildings, paved parking lots, and outdoor storage yards lies farther to both the south and north. At its northwest and southeast corners, the project site lies in close proximity to neighboring residential development. Other than these residences, the closest residential areas are located over 0.25 miles away.

Nighttime lighting in the area includes streetlight fixtures, as well as lighting at industrial and commercial facilities, and localized lighting associated with residential development. Another source of light within the project area is from the existing Barre Substation and peaker plant, including interior and exterior lighting from buildings and equipment.

Transmission structures, including lattice steel towers, steel and wood poles, and other vertical utility structures, such as traffic signals, streetlights, and telecommunications poles, are prevalent throughout the project area.

PROJECT SITE AND PROJECT VIEWSHED

Visual Resources Figure 6, depicts the visual setting of the proposed project and displays the KOP locations.

Project Viewshed

The project viewshed is defined as the general area from which the proposed project would be visible. For purposes of describing a project's visual setting and assessing potential visual impacts, the viewshed can be divided into distance zones of foreground, middleground, and background views. The foreground is defined as the distance between the viewer and 0.25 to 0.5 mile from the viewer. Landscape detail is most noticeable and objects generally appear most prominent when seen in the foreground. The middleground is a zone 0.5 to 3 miles from the viewer, and the background extends beyond 3 to 5 miles from the viewer. Background of the site, from within the low lying areas of the basin, are generally not available due to development and vegetation that may screen visibility within this area of relatively level topography.

Although consideration is given to potential effects on the more distant views, the analysis of the proposed project places emphasis on the potential effects on foreground viewshed conditions. In the case of the Stanton project, visibility is generally limited to only locations along nearby public streets due to the relatively flat topography and presence of intervening development and landscape vegetation. Views toward the project site, from many locations within the surrounding area, are generally screened.

Sensitive Viewer Groups

Potentially sensitive viewer groups in the viewshed include motorists and residents on Dale Road, Pacific Street, and Monroe Avenue. No notable visitor destinations or recreational sites were identified in the project viewshed. Additional representative photographed viewpoints were provided from local parks, Katella Avenue, Robert M Pyles Elementary School, and Southern Pacific Railroad (shown in **Visual Resources Figure 6**). Motorists on local urban streets, in particular Dale Avenue, a five lane arterial, comprise the largest viewer group. Motorists may comprise various local and regional roadway travelers who are familiar with the visual setting, as well as travelers who use the roadway on a less regular basis, and include roadway travelers who are commuters, private vehicle or public transit passengers, and commercial truck or emergency vehicle drivers. The posted speed limit on nearby roads is 25 miles per hour (mph). View duration for motorists traveling along Dale Avenue and other local streets would typically be relatively brief. Residents near the site are another important viewer group. The northwest and southeast corners of the project site lie close to residences located in a mixed-use area. Views from residential areas are long in duration. Workers at nearby commercial and industrial facilities are a third viewing group. This includes local business owners and employees. Another group is pedestrians walking along sidewalks in the project vicinity. These include people using local businesses, offices, and the nearby church. With their slower travel speed, pedestrians' view duration is generally longer than for motorists, thus, individuals in this group are likely to notice more detail with respect to visual change in the environment.

Power Plant Site

The relatively flat project site is approximately four acres situated at an elevation of approximately 70 feet above sea level. The shape of the site is narrow, with only 120 feet of street frontage along Dale Avenue on the east side, and less than 100 feet of street frontage on Pacific Avenue at the northwest corner. The longer dimension of the rectangular shaped site is approximately 1,600 feet, bordered respectively by a railroad spur and a transmission corridor on the south and north. The Stanton Storm Channel, a narrow concrete-lined ditch, bisects the site. The storm channel is not available for public access. Currently enclosed by chain link fences, the western portion of the site (Parcel 2) includes several low, single story buildings and paved open-air storage, while the eastern half (Parcel 1) is undeveloped.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section includes 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.

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 6 maps the locations of the four KOPs used in this visual resources analysis:

- KOP 1 – View from Dale Avenue at Monroe Avenue
- KOP 2 – View from Dale Avenue at Standustrial Street
- KOP 3 – View from Pacific Street at Sycamore Avenue
- KOP 4 – View from Monroe Avenue

The KOPs may be grouped into the following broad categories of sensitive viewers with visual exposure to the proposed project:

KOPs 1 and 2 address effects of the power plant to viewers on Dale Avenue.

KOP 3 addresses effects of the power plant to viewers in the residential community east of the project.

KOP 4 addresses effects of the power plant to viewers on Monroe Avenue.

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. The city of Stanton

General Plan designates gateways at major entries into the city. A goal set forth by the general plan is to develop and maintain a “sense of arrival” upon entrance to the city of Stanton. The nearest city gateway is located at Dale and Katella avenues, 1,300 feet south of the project. The project would not be visible from this location and would not have significant adverse impacts on views from this designated gateway (or any other gateways located farther away).

Therefore, the project would not have a substantial adverse effect on locally regarded scenic vistas. With recommended conditions of certification, impacts would be further minimized 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 scenic resources on the Stanton site that could be damaged by the proposed project. In addition, there are no designated or eligible state scenic highways within the project viewshed. The nearest Designated State Scenic Highway is State Route (SR-) 91 east of SR-55, located 9 miles northeast of the project site. Highway 1, an Eligible State Scenic Highway and Orange County Scenic Route, is located 7.6 miles to the west. The project would not be visible from either of these roadways. Therefore, the project would not have a substantial adverse effect under this criterion.

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:

Views on Dale Avenue (KOPs 1 and 2)

KOP 1 – View from Dale Avenue at Monroe Avenue Looking Northwest

KOP 1 addresses potential impacts of the project power plant on various types of viewers. **Visual Resources Figures 7a** and **7b** show existing and simulated views of the power plant site from Dale Avenue at Monroe Avenue looking northwest at a distance of approximately 260 feet from the project site. This view point represents the views experienced by northbound Dale Avenue motorists, as well as by pedestrians walking north, along the west side of Dale Avenue. Additionally, this is a view similar to one experienced by a limited number of residents at the northwestern edge of Katella Estates; however, the project site is somewhat less visible to residential viewers due to the set back from Dale Avenue.

Visual Sensitivity

Visual Quality: In the **Visual Resources Figure 7a** view, part of the undeveloped project site can be seen, set back from the street, beyond the two-story commercial building with a terracotta colored roof, on the left. Elements such as commercial signage, a railroad crossing signal, and utility poles seen in the foreground are characteristic of the streetscape seen near the project site frontage. Beyond the project site, one- and two-story commercial and industrial structures on the left reflect the area's visual character along this portion of Dale Avenue. Silhouetted against the sky, wood poles are also visible along the west side of the street and in the distance, beyond the commercial buildings in the foreground, while overhead conductors cross the roadway from Barre Substation along a transmission right-of-way located north of the project site. Part of a tree canopy, seen at the right edge of this photograph, indicates the presence of small scale street trees. Due to numerous utility structures situated in an irregular arrangement, the presence of industrial and commercial structures, and lack of unifying landscape or visual elements along the streetscape, visual quality can be considered *low* at KOP 1.

Viewer Concern: A low level of viewer concern is assumed for motorists on Dale Avenue. This section of the Dale Avenue is not an eligible state scenic highway or a designated entry gateway to the city. A low to moderate viewer concern is assumed for pedestrians passing the site. A high level of concern is assumed for a limited number of residents at the northwestern edge of Katella Estates. Overall, viewer concern is thus *moderate*.

Viewer Exposure: Motorists on Dale Avenue comprise the largest viewer group. View duration of the site for motorists traveling along Dale Avenue is typically brief (a few seconds) so exposure is low. Pedestrians in this industrial area are likely to be employees of neighboring businesses passing by for breaks in work. The exposure of the project site from the perspective of pedestrians walking along the east side of Dale Avenue (across the street from the project) is low to moderate. A high level of exposure is assumed for a very limited number of residents at the northwestern edge of Katella Estates. The overall viewer exposure for KOP 1 is *low to moderate*.

Overall Visual Sensitivity: overall visual sensitivity for KOP 1 is *low to moderate.*

Visual Change

Visual Resources Figure 7 b presents a visual simulation of the project as viewed from KOP 1.

Visual Contrast: Beyond the two-story commercial building, the new clock tower/stack enclosure would provide a distinctive focal point along the west side of Dale Avenue. Along the sidewalk, the new perimeter fence would be partially screened by landscaping, which would provide attractive visual interest and definition along the Dale Avenue street frontage. Although the enclosure structure would be slightly taller than adjacent buildings, the building massing would have distinctive aesthetic treatment and its character would not be out-of-context with the style of nearby commercial structures. The new structures would create *low* visual contrast.

Project Dominance: The overall size of the proposed project would be taller than the surrounding structures. Elements such as commercial signage, a railroad crossing signal, and utility poles seen in the foreground appear to dominate the view in size and irregularity. The proposed project would be relatively inconspicuous compared to the existing features in the viewshed, therefore the project dominance would be *low*.

View Blockage: The proposed project would not block any high quality views in the surrounding area. The alteration in view would result in view blockage that would be *low*.

Overall Visual Change: the overall visual change from KOP 1 would be *low*.

Impact Significance

In the context of the setting's low to moderate visual sensitivity, the low level of project visual change is considered less than significant.

KOP 2 – View from Dale Avenue at Standustrial Street Looking Southwest

KOP 2 addresses impacts of the SERC to motorists on Dale Avenue. **Visual Resources Figures 8a** and **8b**, respectively, show an existing view and a visual simulation of the project during its operational phase, from Dale Avenue looking southwest toward the project site. Similar to KOP 1, this view reflects existing visual character along Dale Avenue in the immediate vicinity of the project site, and represents close range views of the project, as experienced by southbound motorists, as well as pedestrians along the sidewalk, while walking adjacent to Barre Substation. Because intervening structures and vegetation generally screen views toward the project from locations to the north, including farther away along Dale Avenue, KOP 2 is a location where Stanton would be most visible.

Visual Sensitivity

Visual Quality: **Visual Resources Figure 8a** shows a somewhat open view of the site from near Standustrial Street, looking southwest across a transmission line corridor which lies adjacent to the site. Also seen in the foreground right is Stanton Storm Channel, which curves and bisects the site. From this viewpoint, the site's eastern portion (Parcel 1) and Dale Avenue frontage are visible; however, the western part of the project site (Parcel 2) is obstructed by the single story commercial building at the right edge of the view. Beyond the fenced site, which is covered in low growing vegetation, scattered mature trees are visible interspersed with one- and two-story industrial and commercial buildings. Silhouetted against the sky, several steel lattice towers also appear in the background. Visual character seen at KOP 2 is similar to KOP

1. Due to numerous utility structures situated in an irregular arrangement, the presence of industrial and commercial structures, and lack of unifying landscape or visual elements along the streetscape, visual quality can be considered *low* at KOP 2.

Viewer Concern: A low level of viewer concern is assumed for motorists on Dale Avenue. This section of the Dale Avenue is not an eligible state scenic highway or a designated entry gateway to the city. A low to moderate viewer concern is assumed for pedestrians passing the site. Overall, viewer concern is thus *low*.

Viewer Exposure: Motorists on Dale Avenue comprise the largest viewer group. View duration for motorists traveling along Dale Avenue is typically brief (a few seconds) so exposure is low. Pedestrians in this industrial area are likely to be employees of neighboring businesses passing by for breaks in work. The exposure of the project site from the perspective of pedestrians walking along the west side of Dale Avenue is low to moderate. The overall viewer exposure for KOP 2 is *low.*

Overall Visual Sensitivity: overall visual sensitivity for KOP 2 is *low.*

Visual Change

Visual Contrast: The new clock tower/stack enclosure would provide a distinctive focal point along the west side of Dale Avenue. Along the sidewalk, the new perimeter fence would be partially screened by landscaping, which would provide attractive visual interest and definition along the Dale Avenue street frontage. Although the enclosure structure would be slightly taller than adjacent buildings, the building massing would have distinctive aesthetic treatment and its character would not be out-of-context with the style of nearby commercial structures. The new structures would create *low* visual contrast.

Project Dominance: The overall size of the proposed project would be taller than the surrounding structures. Elements such as commercial signage, a railroad crossing signal, and utility poles seen in the foreground appear to dominate the view in size and irregularity. The project dominance would be *low to moderate*.

View Blockage: The proposed project would not block any high quality views in the surrounding area. The alteration in view would result in view blockage that would be *low*.

Overall Visual Change: The overall visual change from KOP 2 would be *low to moderate*.

Impact Significance

In the context of the setting's low visual sensitivity, the low to moderate level of project visual change is considered less than significant.

View from the West

KOP 3 – View from Pacific Street at Sycamore Avenue Looking East

Visual Resources Figures 9a and **9b,** respectively show the existing view and visual simulation of the SERC during its operational phase, as seen from Pacific Street at

Sycamore Avenue, looking east. Located approximately 260 feet from the northwestern edge of the project site, KOP 3 is representative of close-range views experienced from a nearby street in a mixed-use neighborhood that includes residences near the edge of industrial and commercial development.

Visual Sensitivity

Visual Quality: **Visual Resources Figure 9a** shows the street view as seen from Pacific Street looking east towards the project site. This scene is dominated by large transmission structures and lines running parallel and perpendicular to a viewer's perspective. A worn metal building sits at the end of the road where Pacific Street becomes Fern Avenue. Due to numerous utility structures situated in an irregular arrangement, the presence of industrial and commercial structures, and lack of unifying landscape or visual elements along the streetscape, visual quality can be considered *low* at KOP 3.

Viewer Concern: Current views of the skyline from KOP 3 are dominated by the existing transmission structures. There are not wide scenic views visible from this location. A low level of viewer concern is assumed for motorists on Pacific Street. A low to moderate viewer concern is assumed for pedestrians on this street. A moderate level of concern is assumed for residents on Pacific Street. Overall, viewer concern is thus *low to moderate*.

Viewer Exposure: A small number of motorists are expected to travel on Pacific Street, a small local street. As drivers head east on Pacific Street the view of the project site is slightly visible then drops below the industrial and commercial buildings in the foreground until barely visible. The duration is brief and therefore motorist exposure is low to moderate. KOP 3 also represents the view of residents on Pacific Street. The exposure of residents in the viewshed of the project is assumed to be high. The overall viewer exposure is *moderate*.

Overall Visual Sensitivity: overall visual sensitivity at KOP 3 is *low to moderate*.

Visual Change

Visual Contrast: **Visual Resources Figure 9b** shows that part of the new project would be somewhat noticeable from this residential street location, and the new facility would not be dissimilar in character or scale to existing industrial structures and other development seen in the area. Although the stack enclosures would be taller than many adjacent structures, they would be set back from this residential street, and would not appear irregular amongst the taller existing transmission structures. The project landscaping would complement the appearance of the new perimeter fence that would replace the existing old chain-link fence. The visual contrast of KOP 3 would be *low*.

Project Dominance: The overall size of the proposed project would be taller than the surrounding structures. The transmission structures seen in the foreground appear to dominate the view in size and irregularity. The proposed project would be relatively inconspicuous compared to the existing features in the viewshed, therefore the project dominance would be *low*.

View Blockage: The proposed project would not block any high quality views in the surrounding area. The alteration in view would result in view blockage that would be low.

Overall Visual Change*:* The overall visual change from KOP 3 would be *low.*

Impact Significance

In the context of the setting's low to moderate visual sensitivity, the low level of project visual change is considered less than significant.

View from the South

KOP 4 – View from Monroe Avenue Looking North

Visual Resources Figures 10a and 10b, respectively, are an existing view looking northeast toward the project site from Monroe Avenue, and a visual simulation of the project during the operational period. This KOP shows a relatively open view toward the site from the closest public street on the south side of the project site, and is taken from near an existing transmission and drainage channel corridor.

Visual Sensitivity

Visual Quality: **Visual Resources Figures 10a** shows the street view as seen from Monroe Avenue looking north towards the Stanton site. The KOP 4 view shows that an opaque fence in the immediate foreground partially screens single story buildings. A line of wooden utility poles located north of the roadway and intervening trees provide some additional screening. On the left, wooden pallets stacked on the eastern edge of the western half of the project site (eastern edge of Parcel 2) are visible beyond a tree canopy seen in the foreground. Beyond the project site, vertical utility structures, including Barre Substation components, are noticeable against the sky, and on the right, the Barre Peaker Plant stack can also be seen. Due to numerous utility structures situated in an irregular arrangement, the presence of industrial and commercial structures, and lack of unifying landscape or visual elements along the streetscape, visual quality can be considered *low* at KOP 4.

Viewer Concern: Current views of the skyline from KOP 4 are dominated by the existing transmission structures. There are not wide scenic views visible from this location. A low level of viewer concern is assumed for motorists on Monroe. A low to moderate viewer concern is assumed for pedestrians, likely employees of nearby commercial businesses. Overall, viewer concern is *low*.

Viewer Exposure: A small number of motorists are expected to travel on Monroe Avenue, a small local street. Looking north along the drainage channel the site is partially visible. However, given that views toward the project site are at an angle perpendicular to the road, the views of motorists from Monroe Avenue are limited and brief in exposure. The view of pedestrians on Monroe Avenue is assumed to be low to moderate. The overall viewer exposure is *moderate*.

Overall Visual Sensitivity: The overall visual sensitivity at KOP 4 is *low to moderate*.

Visual Change

Visual Contrast: **Visual Resources Figure 10 b** shows that part of the new project would be somewhat noticeable from KOP 4, and the new facility would not be dissimilar in character or scale to existing industrial structures and other development seen in the area. Although the stack enclosures would be taller than many adjacent structures, they would be set back from the street, and would not appear irregular amongst the taller existing transmission structures. The SERC colors would match the surrounding structures in the area. The visual contrast at KOP 4 would be *low*.

Project Dominance: The overall size of the proposed project would be taller than the surrounding structures. The transmission structures and lines seen in the foreground and background appear to dominate the view in size and irregularity. The proposed project would be relatively inconspicuous compared to the existing features in the viewshed, therefore the project dominance would be *low*.

View Blockage: The proposed project would not block any high quality views in the surrounding area. The alteration in view would result in view blockage that would be low.

Overall Visual Change*:* The overall visual change from KOP 4 would be *low.*

Impact Significance

In the context of the setting's low to moderate visual sensitivity, the low level of project visual change is considered less than significant.

Staff Recommended Mitigation:

As proposed, the project would not generate a significant visual impact. To ensure that the impacts remain less than significant throughout the life of the project staff proposes Condition of Certification **VIS-1** (Surface Treatment of Project Structures).

City of Stanton Staff Recommendations:

On October 25, 2016, city of Stanton staff submitted a letter to the California Energy Commission expressing their support for the project. The letter explains the role the city played in the conceptual and aesthetic design of the Stanton project including the overall landscaping plan for the site. The city of Stanton zoning ordinance would require a height variance for the Stanton project's gas turbine enclosures and main exhaust stacks. The city finds the architectural cladding of the stacks as a suitable project enhancement to justify the issuance of a variance. The city of Stanton states that the preliminary landscape plan conforms to the intent of the city's landscape policies incorporating a combination of screening and Dale Avenue and Pacific Street frontages landscaping at the site. The city also agreed to allow the project owner to fund the planting of additional trees in Stanton's Central Park, and to fund additional landscaping in the public right-of-way. It is the city of Stanton staff's determination that the combination of on-site and off-site landscaping met the intent of the city's landscaping ordinance and policies (COS 2016a).

Construction Impacts and Mitigation

Temporary construction facilities would include a laydown area on the western portion of the project site. During the 14-month construction period, construction materials, large equipment, trucks, temporary lighting, and parked vehicles could be visible in this area. Public views toward the laydown area would be screened perimeter fencing. In addition, this portion of the site is set back approximately 750-feet from the site's major frontage along Dale Avenue.

Linear Facilities

Visual Resources Figure 2 delineates the proposed generator tie-line, and gas line route.

The generator tie-line will be installed completely underground from the last structure in the Skip substation all the way to the tubular steel pole structure located in the Barre substation. The generator tie-line would have less than significant visual impacts.

Natural gas would be delivered to the project via a 2.75-mile-long pipeline extending north along Dale Avenue to La Palma Avenue. At the project site, the natural gas would flow through either a 12-inch- or 16-inch pipeline, turbine-meter set, gas scrubber/filtering equipment, a gas pressure control station, electric-driven booster compressors, and coalescing and final fuel filters prior to entering the combustion turbines. Following construction, the pipeline would not be visually evident and would have less than significant visual effects.

The project would use water supplied by Golden State Water Company via water supply pipelines located in Dale Avenue and/or Pacific Street. This source would also provide water for fire protection and service water, potable outlets, and safety showers. Once tapped into the existing water supply, the pipeline 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 from 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 potential visual plume significance (20 percent of seasonal daylight clear hours). Formation of visible plumes from the project would be an unlikely occurrence related to an unusual combination of near freezing temperatures and damp conditions. Additionally, as a reliability facility, with an operating profile expected to be similar to a peaker, the facility is most likely to operate at times (e.g. late afternoon, hot days) when plumes are least likely to form. Staff concluded that there would be little or no plume formation under anticipated operating and ambient conditions, and therefore visual water vapor plumes would have less than significant visual effects.

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. Construction lighting would be needed because some construction activities may take place 24 hours a day, seven days a week.

For temporary and permanent project lighting, staff-recommended Conditions of Certification **VIS-3** and **VIS-4** 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 is not to be directed upward, does not illuminate the nighttime sky, and conforms 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. Staff concludes that with implementation of **VIS-3** and **VIS-4**, the project would meet the lighting requirements in Chapter 20 of the city of Stanton Municipal Code.

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 or treated in non-reflective colors and finishes, transmission line conductors would be non-specular and non-reflective, and transmission line insulators would be non-reflective and non-refractive. With this condition, no reflective glare would be anticipated.

With implementation of Conditions of Certification **VIS-1**, **VIS-3**, and **VIS-4**, construction and operation of the project would not be sources of substantial light or glare that would adversely affect day or nighttime views in the area. Project light and glare impacts in the context of the existing setting 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 visual sphere of influence (VSOI). These three cumulative projects are the three closest projects to the Stanton site, and appear as the first three listed projects in the **Executive Summary Table 1**. These projects include:

1. Construction of a 2,418 square foot fast food restaurant with drive-through

2. Construction of a four unit condominium project

3. Proposal to construct two new commercial office buildings

All three of these cumulatively considered projects are within 0.75 miles of the Stanton project site. The proposed cumulative projects would introduce additional structures to the project's VSOI. Because the existing visual setting of these three proposals is a mix of commercial and residential uses, visual sensitivity is low to moderate. Under a cumulative scenario of these projects and Stanton, cumulative visual change would be low. Impacts would be perceived, but would remain less than significant. The cumulative effect would likely not be perceived beyond the immediate area as the topography of the area does not allow for distant views. Few vantage points exist at ground level where the SERC site and the cumulative project sites are both visible. These views would remain dominated by the tall transmission structures surrounding the Barre Substation.

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 LORS where appropriate.

Visual Resources Table 3
Proposed Project's Consistency with LORS Applicable to Visual Resources

Applicable LORS	Consistency Determination	Basis for Determination
City of Stanton General Plan		
Goal RC-3.1.2 (c) Clean and safe air quality. Protect sensitive receptors by creating an urban tree-planting program to plant trees that remove pollutants from the air or provide shade that decreases the negative impacts of heat on the air.	Consistent	**Visual Resources Figure 11a** shows that the project includes landscaping with evergreen canopy trees. **VIS-2** would ensure the project would stay consistent with this goal throughout the life of the project.
Goal CD-3.1 Provide both residents and visitors with a "sense of arrival" upon their entrance into Stanton. **Strategy CD-3.1.1** Develop and maintain gateways at major entries into the city. **Action CD-3.1.1 (a)** Develop a comprehensive gateway design and improvement program for both primary and secondary city gateways. **Action CD-3.1.1 (b)** Create unifying landscape and architectural themes at primary and secondary gateways.	Consistent	The nearest city gateway is located at Dale and Katella avenues, 1,300 feet south of the project. The project is not visible from this location. City of Stanton staff determined that the architectural themes of the project would be consistent with the area around the project site, and therefore would not adversely affect views from this designated gateway (COS 2016a).
Street Tree Master Plan Tree-planting program to encourage street trees within the city.	Consistent	**Visual Resources Figure 11a** shows that the project includes landscaping with evergreen canopy trees. **VIS-2** would ensure the project would stay consistent with this goal throughout the life of the project. The city of Stanton staff agreed to allow the project owner to fund additional landscaping in the public right-of-way (COS 2016a).
City of Stanton Municipal Code		
Chapter 12.20 **Street Tree Plan** This chapter describes requirements for planting, removing, or replacing trees within the public right-of-way.	Consistent	The city of Stanton staff agreed to allow the project owner to fund additional landscaping (trees) in the public right-of-way (COS 2016a). The plantings would be consistent with the requirements of the chapter. The project would not remove or replace trees
Chapter 20.315.040 Landscape Standards This section discusses standards for landscaping for projects in nonresidential zones including area requirements and planting type and size.	Consistent	**Visual Resources Figure 11 a** shows the project's conceptual landscaping plan. This plan would meet the requirements of this ordinance and would be consistent with the State Model Water-Efficient Landscape Ordinance (MWELO). **VIS-2** would ensure the project would stay consistent with this goal throughout the life of the project.

Applicable LORS	Consistency Determination	Basis for Determination
Chapter 20.315.050 Irrigation Plans and Water Conservation Standards This section establishes water-efficient landscape standards that are at least as effective as the State Model Water-Efficient Landscape Ordinance as required by the Water Conservation in Landscaping Act (Government Code Sections 65591 et seq.).	Consistent	**Visual Resources Figure 11 a** shows the project conceptual landscaping plan. This plan would meet the requirements of this ordinance and would be consistent with the MWELO. **VIS-2** would ensure the project would stay consistent with this goal throughout the life of the project.
Chapter 20.300.080 Outdoor Lighting and Glare This section establishes outdoor lighting standards in order to reduce the impacts of glare, light trespass, over lighting, sky glow, and poorly shielded or inappropriately directed lighting fixtures, and promote safety and encourage energy conservation.	Consistent	**VIS-3** and **VIS-4** would ensure the requirements of this section are met and continue to be consistent with this ordinance throughout the life of the project.

NOTEWORTHY PUBLIC BENEFITS

The project would include landscaping along Pacific Street and Dale Avenue which would limit the project dominance within the area. However, no noteworthy visual public benefits were identified.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

No comments pertaining to visual resource impacts were submitted.

ENVIRONMENTAL JUSTICE

The **Environmental Justice Figures 1** and **2** and **Table 3** show the presence of an environmental justice population based on minority and low income population in a six-mile radius of Stanton. 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. KOPs 1-4 reasonably represent the views residents and motorists may experience in daily life. The overall visual change was determined to be low despite the high potential for exposure from a very limited number of residents. Staff's proposed mitigation would reduce visual resource impacts to less than significant for the population in general, including the EJ population. The changes to the visual resource environment would not disproportionally affect individuals in EJ populations because of the low degree of visual change.

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 not affect scenic vistas within the city of Stanton or surrounding region.
- The proposed project would not damage any scenic resources within the city of Stanton or surrounding region.
- 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 for the life of the project.
- 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 **Environmental Justice Figures 1** and **2** and **Table 3**.
- The project, as currently proposed, would be in conformance with applicable local LORS pertaining to visual resources with the effective implementation of staff's proposed conditions of certification.

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 and finish of the gas turbine facility enclosures and all other visible major power plant features, as well as all transmission line monopoles, in the colors and finishes outlined in Table 5.13-2 of the Stanton project Application for Certification (SERC 2016a). The project owner shall submit for CPM review and approval, a specific surface treatment plan that would 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 when the picture is held 10 inches from the viewer's eyes, of the treatment proposed for use on project structures, including structures treated during manufacture, from Key Observation Points (KOP) 1 and 2

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 city of Stanton 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 is 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.

SCREENING LANDSCAPE PLAN

VIS-2 The project owner shall also submit to the CPM for review and approval, and simultaneously to the city of Stanton for review and comment, a detailed landscape plan and irrigation plan for the power plant site in fulfillment of requirements of applicable laws, ordinances, regulations, and standards, including water efficiency irrigation standards as required by the city of Stanton.

Protocol: 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 a plan for routine annual or semi-annual debris removal for the life of the project, if applicable;

The plans shall demonstrate compliance with applicable city of Stanton irrigation requirements;

A procedure for monitoring for, and replacement of, unsuccessful plantings for the life of the project; and

Digital photo-simulations of the proposed landscaping at five years and 20 years after planting, as viewed from the foreground of Dale Road (KOP 1) of the right-of-way; and of the power plant site viewed from Pacific Street (KOP 3).

The plan shall not be implemented until the project owner receives final approval from the CPM.

Verification: The landscaping plans and irrigation plans shall be developed and submitted at the earliest feasible time during or prior to construction. The landscaping plans and irrigation plans shall be submitted to the CPM for review and approval and simultaneously to the city of Stanton 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 city of Stanton a revised plan for review and approval by the CPM.

The planting must occur during the first optimal planting season following completion of site construction. The project owner shall simultaneously notify the CPM and the city of Stanton 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 CPM shall have authority to require replacement planting of dead or dying vegetation through the life of the project.

SITE LIGHTING – PROJECT CONSTRUCTION AND COMMISSIONING

VIS-3 Consistent with applicable worker safety regulations, the project owner shall ensure that lighting of on-site construction areas, and construction worker parking lots, minimizes potential night lighting impacts by implementing the following measures:

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 construction-related lighting complaints. Complaints shall be documented using a form in the format shown in Attachment 1, and completed forms shall record resolution of each complaint. A copy of each completed complaint form shall be provided to the CPM. Records of lighting complaints shall also be kept in the compliance file at the project site.

Verification: Within seven calendar days after the first use of construction 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 city of Stanton for simultaneous review and comment. Any comments on the plan from the city shall be provided to the CPM. The project owner shall not purchase or order any lighting fixtures or apparatus until written approval of the final plan is received from the CPM. Modifications to the Lighting Management Plan are prohibited without the CPM's approval.

Consistent with applicable worker safety regulations, the project owner shall design, install, and maintain all permanent exterior lighting such that light sources are not directly visible from areas beyond the project site, glare is avoided, and night lighting impacts are minimized or avoided to the maximum extent feasible. All lighting fixtures shall be selected to achieve high energy efficiency for the facility.

1) The Lighting Management Plan shall meet the following requirements:

   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.

   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.

2) The project owner shall meet, and the Lighting Management Plan shall demonstrate, the following requirements for permanent lighting:

   A. 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.

   B. Exterior lighting shall be designed to minimize backscatter to the night sky to the maximum extent feasible.

   C. Exterior lighting shall utilize fully-shielded luminaires, and conform generally to International Dark-Sky Association recommendations for lighting zone LZ1.

   D. 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.

   E. Lighting fixtures shall be kept in good working order and continuously maintained according to the original design standards.

F. Lighting shall be consistent with all applicable laws, ordinances, regulations, and standards.

G. The CPM shall be notified of any complaints about permanent lighting at the project site. Complaints shall be documented using the Lighting Complaint Resolution Form 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 simultaneously to the Planning Director of the city of Stanton for review and comment and the CPM for review and approval. The project owner shall provide the CPM with a copy of the transmittal letters submitted to the city requesting their review of the Lighting Management Plan. The CPM shall deem the Lighting Management Plan acceptable to the city of Stanton 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 courtesy copy of the revised plan shall be provided to the Planning Director of the city of Stanton for review and comment and the CPM from review and approval. 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 installation of 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.

REFERENCES

COS 2016a – City of Stanton/James A. Box (TN 214269). Letter to John Heiser Re: City of Stanton Review, dated October 25, 2016. Submitted to John Heiser/CEC/Docket Unit on October 31, 2016.

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC 2018n – DayZen LLC/Scott A. Galati (TN 223447). Stanton Energy Reliability Center, LLC's Status Report No.13, dated May 2018. Submitted to CEC/Docket Unit on May 15, 2018.

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 abating 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 would 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 would 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 would 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 would be in the foreground or middleground. Visual elements at the limits of the project VSOI would 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 would 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 would 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 would 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 settings, individual viewers are likely to include employees and managers working in offices and commercial and industrial 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 would 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 would 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 would 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 would 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 would 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 would 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, would 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 would tend to dominate the landscape.

A proposed feature's level of dominance may be lower in a panoramic setting than in an enclosed setting with a focus on the feature itself. A feature's level of dominance is higher if it is (a) near the center of the view, (b) elevated relative to the viewer, or (c) has the sky as a backdrop. As the distance between a viewer and a feature increases, the feature's apparent size decreases and its dominance decreases as a consequence. The level of dominance is rated from low (subordinate) to high (dominant).

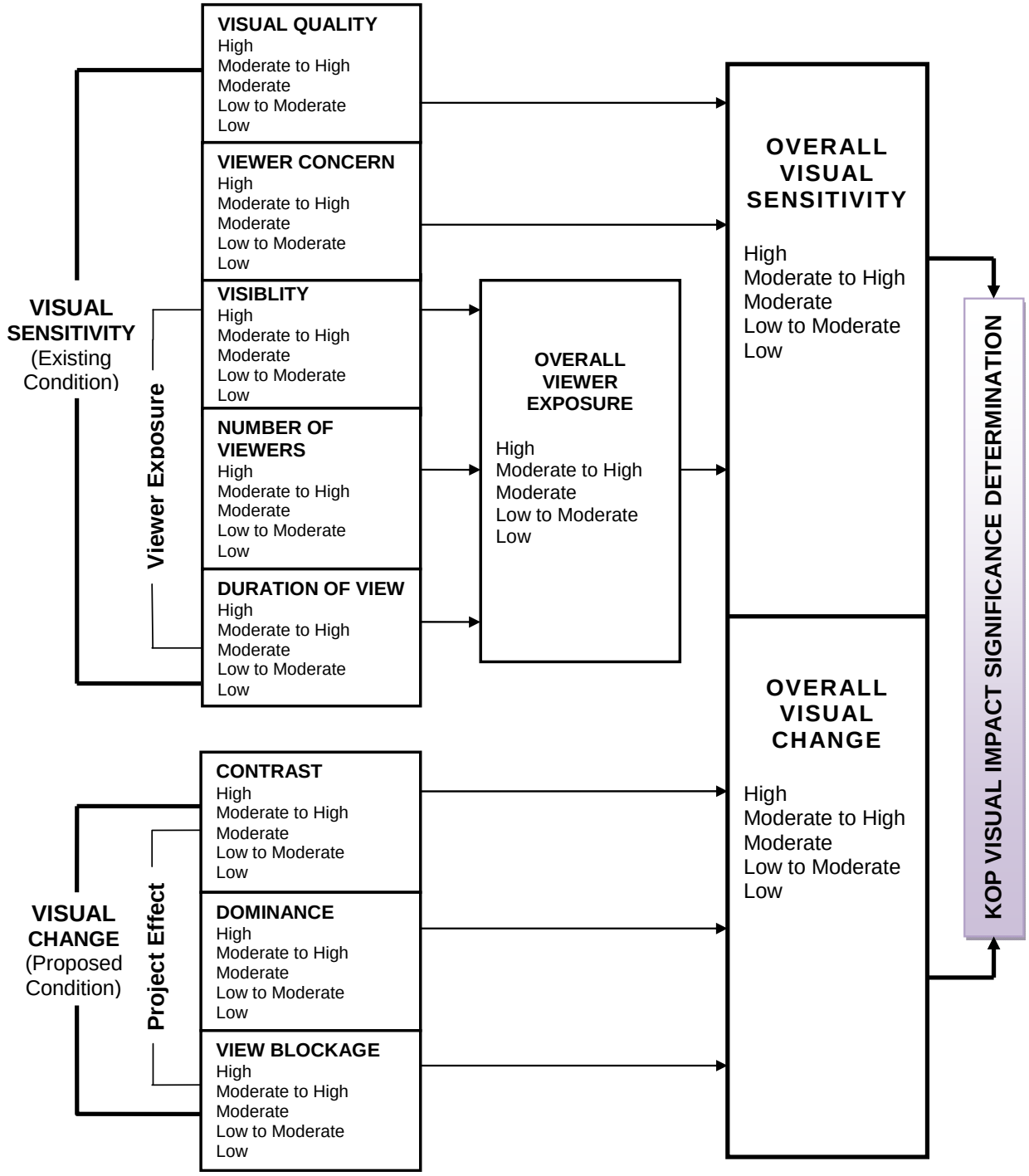
View Blockage

View blockage is the extent to which an existing publicly visible landscape feature (built or natural elements) would be blocked from view by the proposed project. The view is also disrupted when the continuity of the view is interrupted. Higher quality landscape features can be disrupted by the introduction of lower quality features into the view. The degree of view blockage is rated from low to high.

Overall Visual Change

Overall visual change is based on *contrast*, *dominance*, and *view blockage*. These factors are given equal weight in an assessment of overall visual change. Overall visual change is rated from low to high.

VISUAL RESOURCES Diagram 1- Key Observation Point Evaluation



VISUAL IMPACT SIGNIFICANCE DETERMINATION

Visual impact significance is based on the ratings for *overall visual sensitivity* and *overall visual change*. The ratings for overall visual sensitivity and overall visual change are combined to determine significance of the visual impact for each KOP (**Table 5**).

Table 5
KOP Visual Impact Significance Determination

Overall Visual Sensitivity	Overall Visual Change				
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**
High	Significant	Significant	Significant	Less Than Significant	Less Than Significant
Moderate to High	Significant	Significant	Potentially Significant	Less Than Significant	Less Than Significant
Moderate	Significant	Potentially Significant	Less Than Significant	Less Than Significant	Less Than Significant
Low to Moderate	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant	No Impact
Low	Less Than Significant	Less Than Significant	Less Than Significant	No Impact	No Impact

Notes:

"Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (Cal. Code Regs., tit. 14, § 15382). Implementation of mitigation measures may or may not avoid the impact or reduce it to a less-than-significant level.

CEQA does not require mitigation for less-than-significant impacts.

PUBLICLY VISIBLE WATER VAPOR PLUMES

When a thermal power generation facility with a cooling tower[1] is operated at times when the ambient temperature is low and relative humidity is high, the warm moisture (water vapor) that is discharged from the cooling tower condenses as it mixes with cooler ambient air, resulting in creation of a visible plume. The publicly visible plume could substantially degrade the existing visual character or quality of the project site and its surroundings, potentially causing a significant impact to visual resources.

Computer modeling is used to estimate the frequency and size of the vapor plume(s) for a power plant project. If the plume modeling analysis results in a conclusion that plume frequency is greater than 20 percent, staff prepares an analysis of the vapor plume's potential effects on visual resources in the VSOI for the project.

[1] Other types of thermal power generation facilities are also sources of visible water vapor plumes, including combined-cycle gas turbine exhausts and geothermal steam exhausts. These facilities are evaluated in the same manner as cooling tower plumes.

Staff established a 20th percentile plume frequency during *seasonal* (November through April) *daylight clear* hours (i.e., no rain/fog high visual contrast hours) as a reasonable worst-case scenario. It is during high visual contrast viewing hours ("clear sky") conditions that water vapor plumes show the greatest contrast with the sky. Water vapor plumes emitted during rain and fog conditions and under some cloud conditions (e.g., marine layer) or at nighttime would not introduce substantial visual contrast into the environment. Staff has included in the *clear* category:

a) All hours with sky cover equal to or less than 10 percent, and

b) Half of the hours with total sky cover of 20–90 percent.

The rationale for including these two components in this category is as follows:

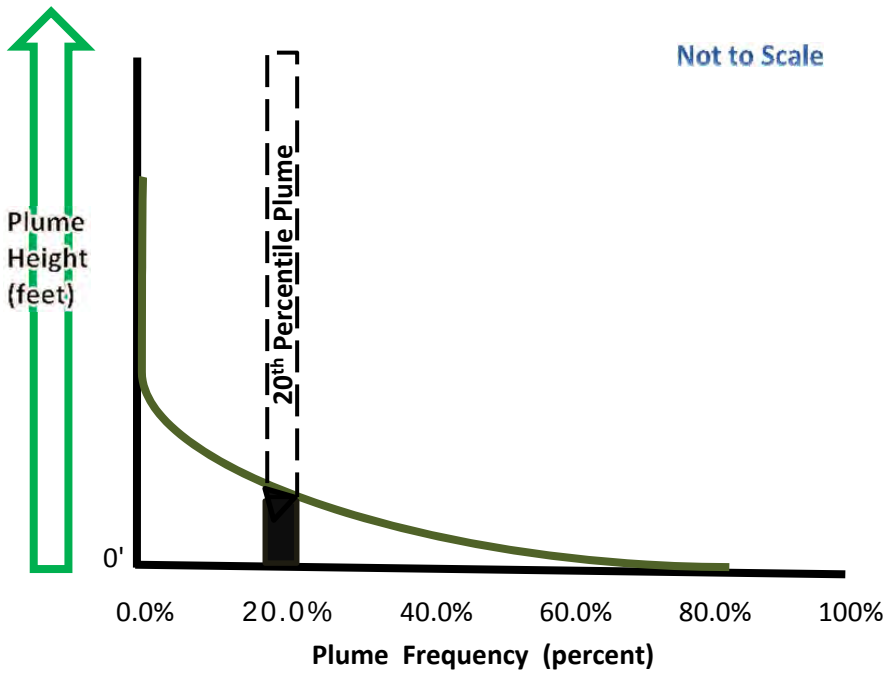
a) Visible plumes typically contrast most with sky under clear conditions, and when total sky cover is equal to or less than 10 percent, clouds either do not exist or they make up such a small proportion of the sky that conditions appear to be virtually clear.

b) For a substantial portion of the time when total sky cover is 20–90 percent, the opacity of sky cover is relatively low (equal to or less than 50 percent), so this sky cover does not always substantially reduce contrast with visible plumes; staff has estimated that approximately half of the hours meeting the latter sky cover criteria can be considered high visual contrast hours and are included in the "clear sky" definition.

Plume frequency is calculated on the six-month portion of the year when the ambient conditions are such that visible water vapor plumes are most likely to occur. This maximum six-month "seasonal" period for plume formation generally occurs between November and April when temperatures are cool or cold, and relative humidity is high.

Staff uses the Combustion Stack Visible Plume (CSVP) model to estimate plume frequency and plume size. If the CSVP modeling conducted for the proposed project's cooling tower predicts a *seasonal daylight clear* hour plume frequency of 20 percent or greater, staff evaluates the *20th percentile plume* in the visual resources analysis. (Discussions of visible water vapor plumes are presented in the Visual Resources section of staff assessments.) Staff considers the 20th percentile plume to be the reasonable worst-case plume dimension for the purpose of analysis. Publicly visible plumes that occur more than 20 percent of the time would be more frequent but smaller in size than those that occur less than 20 percent of the time. This approach recognizes that the largest plumes would occur very rarely, while the most frequent plumes and even the average plumes would be much smaller in size. For example, using a scale of 0 to 100, a one percentile plume would be extremely large, very noticeable to a wide area, but would occur very infrequently. A 100th percentile plume would be nonexistent (see Diagram 2 below). If the modeled publicly visible plume is predicted to occur less than 20 percent of seasonal daylight clear hours, the impact to the existing visual character or quality of the project site and its surroundings is generally considered less than significant, and it is not considered further in the visual resources analysis.

Visual Resources Diagram 2 – Visible Plume Height/Frequency Curve



A plume frequency of 20% represents staff's threshold for conducting a detailed plume analysis.

In the evaluation of the visual effects of the modeled 20th percentile plume, staff addresses the *overall visual sensitivity* for the existing condition and the potential *overall visual change* created by the plume's degree of contrast, level of dominance, and view blockage from the selected KOPs (see Visual Resources Diagram 1).

PUBLICLY VISIBLE WATER VAPOR PLUME ABATEMENT METHODS

Staff has identified four methods to lower a plume's frequency or eliminate the plume completely.

Increase Cooling Tower Air Flow

Increasing the cooling tower air flow would lower the exhaust temperature and reduce plume frequency but would not eliminate the potential for visible water vapor plumes under all conditions. This method focuses on the design of the cooling tower fan flow capacity versus the amount of heat rejected in the cooling tower. Any specific cooling tower design needs to be fully modeled to determine the effective final plume frequency reductions.

Wet/Dry Cooling Tower

This type of cooling tower reduces plume formation by adding heat or heated ambient air to the saturated wet cooling section exhaust to reduce its saturation level. The saturated exhaust can be heated using a separate dry module above the wet cooling tower. Alternatively, outside air can be pulled into separate areas where a dry section heats the air to reduce humidity and a wet section creates warm, humid exhaust. The heated ambient air and humid exhaust are mixed to reduce the humidity of the combined exhaust steam to avoid creating a plume when meeting ambient air.

The amount of plume reduction that can be accomplished by this type of system can vary from a relatively moderate reduction to a significant reduction in visible plume frequency. The specific wet/dry design would be based on the desired degree of plume reduction.

Wet Surface Air Cooler

The basic operating principle of a wet surface air cooler (WSAC) is rejection of heat by evaporation. The WSAC technology is similar to a wet/dry cooling tower. Where this system is different is that it could eliminate the need for a heat exchanger. The cooling fluid(s) used for the intercooler and any auxiliary cooling systems could be piped directly into the WSAC, which can operate as a non-contact heat rejection system with the use of water sprayed over the cooling pipes to increase the heat rejection when necessary. The expected hot temperature of the cooling fluid would increase the efficiency of this type of system. There may still be the potential for plumes to form under high cooling load periods during certain ambient conditions, but the WSAC could be designed, such as for wet/dry operation depending on cooling load, to maintain a minimal plume frequency well below 20 percent during “clear hours.”

Air Cooled Condenser (Dry Cooling)

The use of an air cooled condenser (ACC) would eliminate the formation of a publicly visible water vapor plume. Air cooled condensers condense exhaust steam from the steam turbine and return condensate to the boiler to perform this function. Steam enters the air cooled condenser above the heat exchangers, flows downward through the heat exchanger tubes, where it condenses and is captured in pipes at the base of the heat exchangers. The condensate is then returned to the boiler water system. Mechanical fans force air over the heat exchangers.

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VISUAL RESOURCES
ATTACHMENT-1

Lighting Complaint Resolution Form

Facility Name: Stanton Energy Reliability Center Complaint Log No:

Complainant's name and address: Phone No:

Complainant's Email address:

Date and time complaint received:

Complaint filed: ☐ By Telephone ☐ In Writing (attach letter) ☐ In Person

Date of first occurrence:

Description of the complaint (lighting, duration, etc.):

Findings of investigation by SERC personnel:

Indicate if complaint relates to a violation of an Energy Commission condition: ☐ Yes ☐ No

Date complainant contacted to discuss findings:

Description of corrective measures taken or other complaint resolution:

Indicate if complainant agrees with proposed resolution:

In not, explain:

Additional relevant information:

If corrective action necessary, date completed:

Date of first response to complainant: (attach copy)

Date of final response to complainant: (attach copy)

This information is certified to be correct:

Plant or project manager's signature: Date:

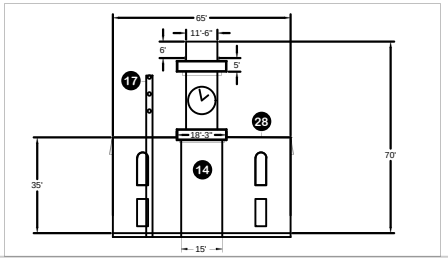
VISUAL RESOURCES - FIGURE 1

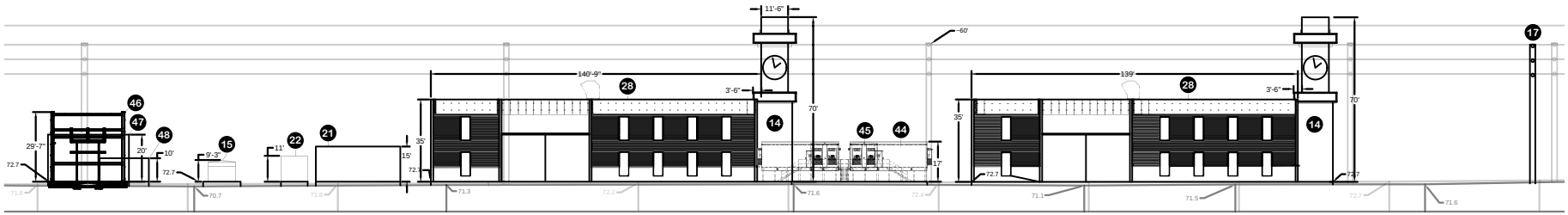
Stanton Energy Reliability Center - Site Elevations

KEYNOTES:

1. GAS TURBINE/GENERATOR
2. SPRINT SKID
3. FOGGER SKID
4. WATER INJECTION PUMPS
5. CLUTCH LUBE OIL SKID
6. HYDRAULIC START SKID
7. FIN-FAN L.O. COOLER
8. UTILITY BRIDGE
9. PORTABLE HAZMAT STORAGE CART
10. SCR/CO UNIT
11. AMMONIA INJECTION SKID
12. PURGE AIR FANS
13. CEMS ENCLOSURE
14. EXHAUST STACK
15. AMMONIA STORAGE TANK & PUMPS
16. WAREHOUSE
17. STEEL POLE MOUNTED DISCONNECT
18. PORTABLE HAZARDOUS MATERIALS & STORAGE
19. TRASH ENCLOSURE
20. GAS MSA YARD (SCG)
21. FUEL GAS COMPRESSOR (FGC)
22. FGC L.O. FIN-FAN COOLER
23. GAS EMERGENCY SHUT-DOWN VALVE
24. FUEL GAS FILTER SKID
25. PARCEL 1 STORMWATER LIFT STATION
26. INVERTER (PCS)
27. ISOLATION TRANSFORMER
28. GT FACILITY ENCLOSURE
29. BATTERY ENERGY STORAGE SYSTEM
30. BACKFLOW PREVENTER
31. WATER FORWARDING SKID
32. DEMINERALIZED WATER SKID
33. REVERSE OSMOSIS SKID
34. DEMINERALIZED WATER TANK
35. FIRE HYDRANT
36. STORMWATER DETENTION TANK
37. FOGGING WATER DRAIN TANK
38. OILY WATER WASTE TANK
39. PARCEL 2 STORMWATER COLLECTION
40. SWITCHGEAR (15KV)
41. AUX TRANSFORMER (480V)
42. AUX TRANSFORMER (4160V)
43. SWITCHGEAR (4160V)
44. POWER DISTRIBUTION MODULE
45. CONTROL MODULE
46. SWITCHYARD
47. GSU TRANSFORMER
48. SWITCHYARD CONTROL
49. BESS SWITCH GEAR
50. AIR COMPRESSOR SKID
51. FIRE ALARM ANNUNCIATOR PANEL

EAST END VIEW

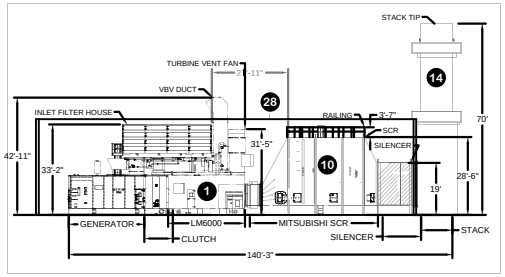




SOUTH SIDE VIEW

0 50' 100'

SCALE



LM6000 EQUIPMENT VIEW

PRELIMINARY

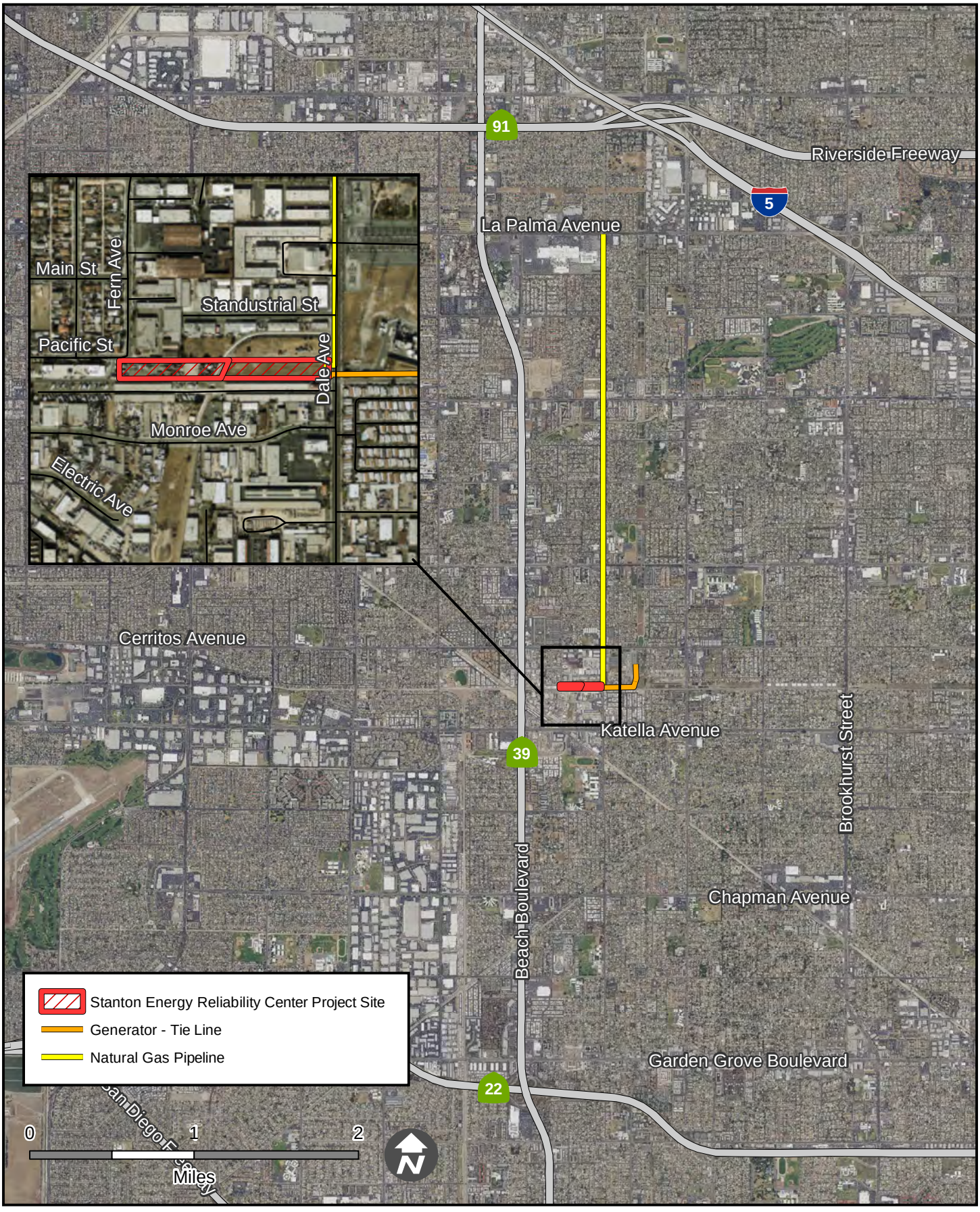
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 2.1-2a - CH2M

VISUAL RESOURCES - FIGURE 2

Stanton Energy Reliability Center - Archaeological Project Area of Analysis

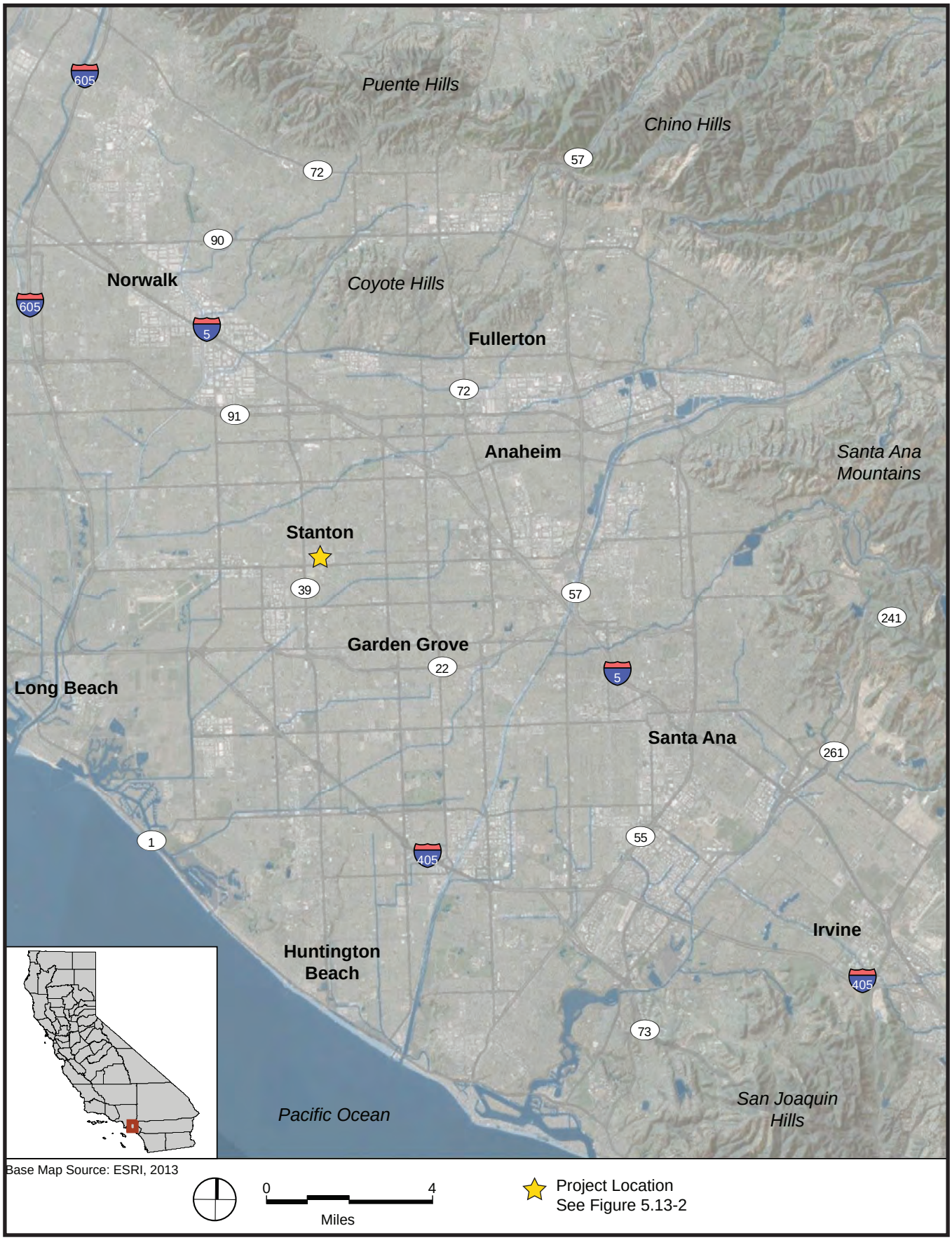


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M, California Energy Commission, USGS

VISUAL RESOURCES - FIGURE 3

Stanton Energy Reliability Center - Regional Setting

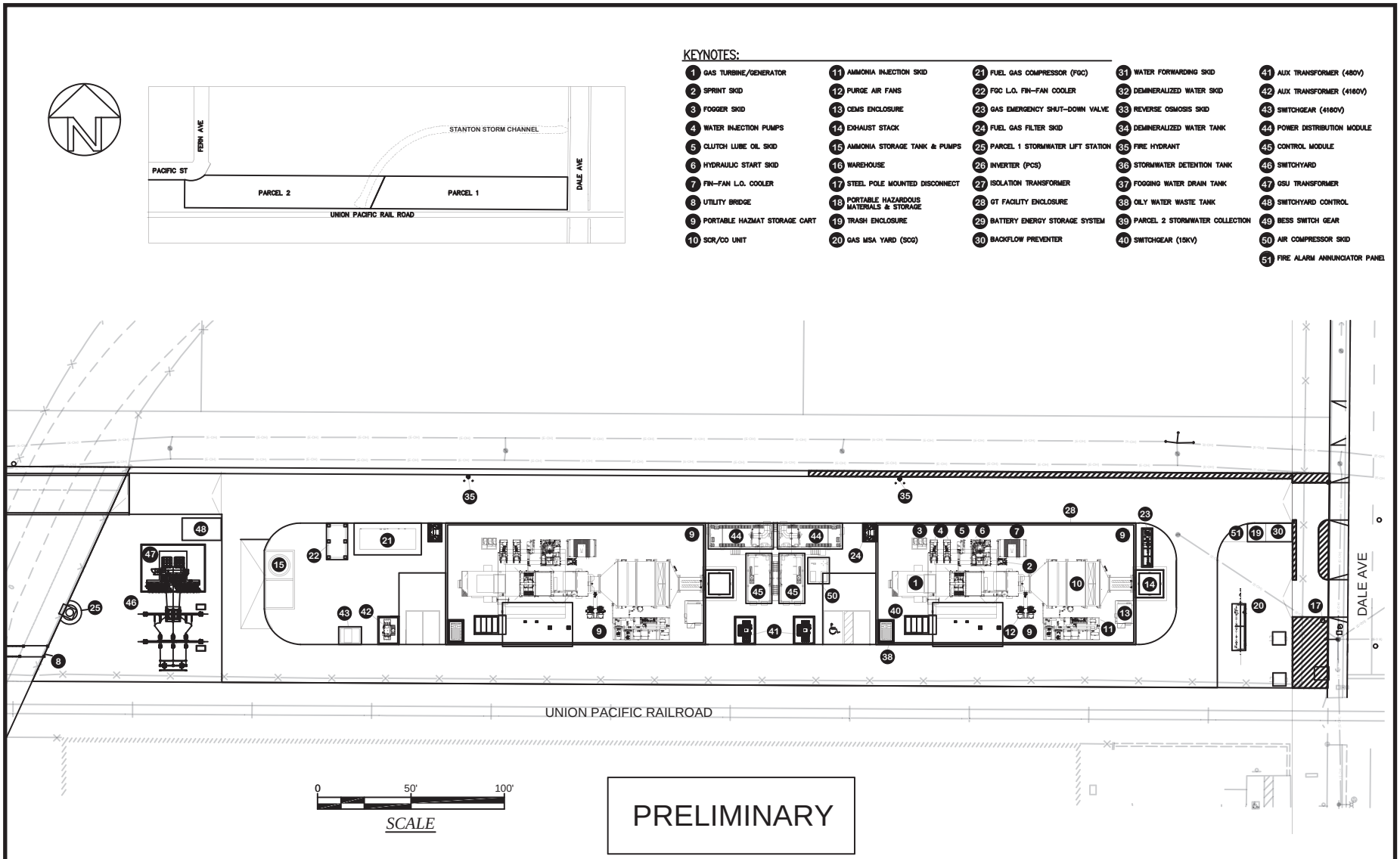


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-1a - CH2M

VISUAL RESOURCES - FIGURE 4

Stanton Energy Reliability Center - General Arrangment Parcel 1



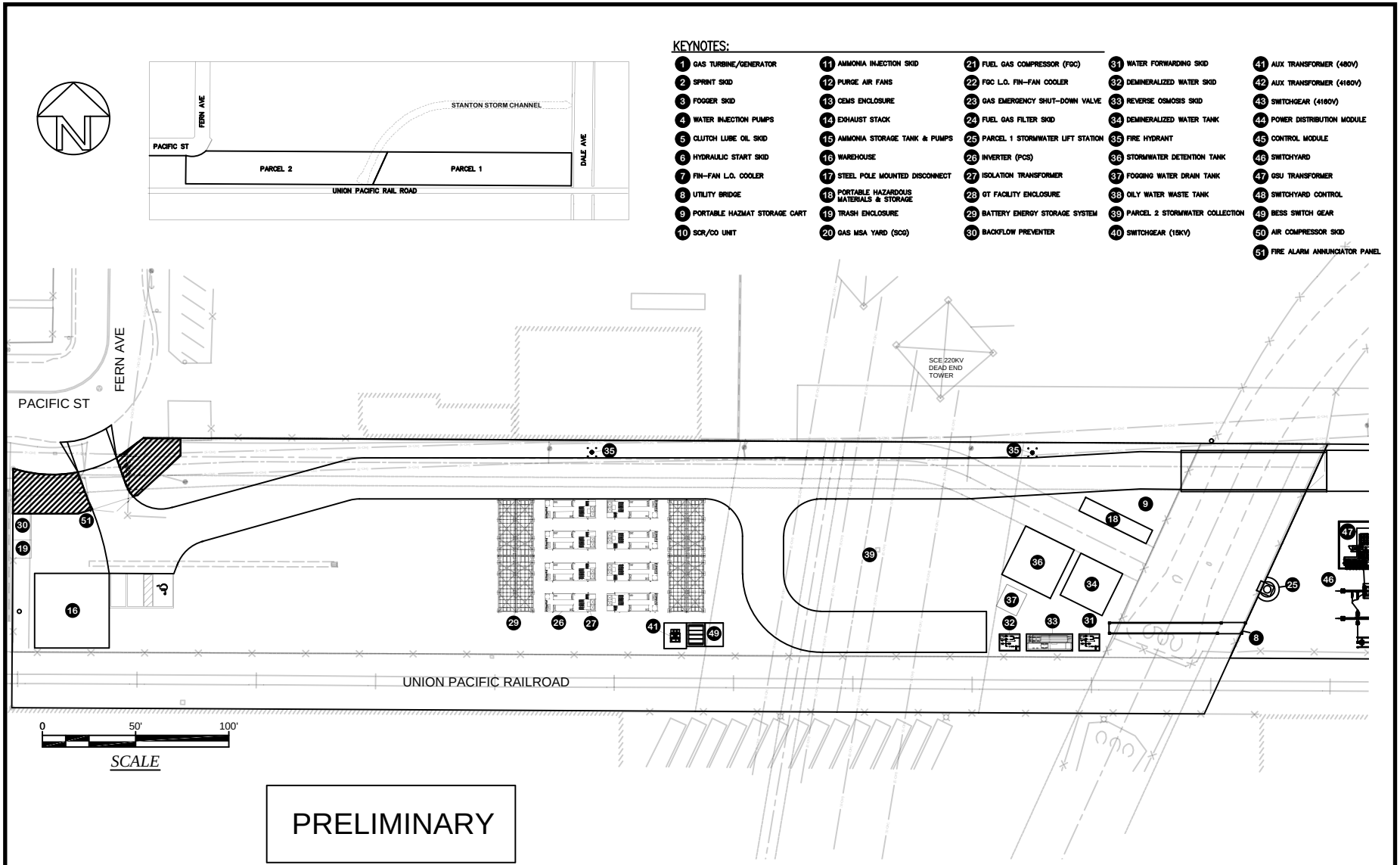
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 2.1-1a - CH2M

VISUAL RESOURCES - FIGURE 5

Stanton Energy Reliability Center - General Arrangment Parcel 2



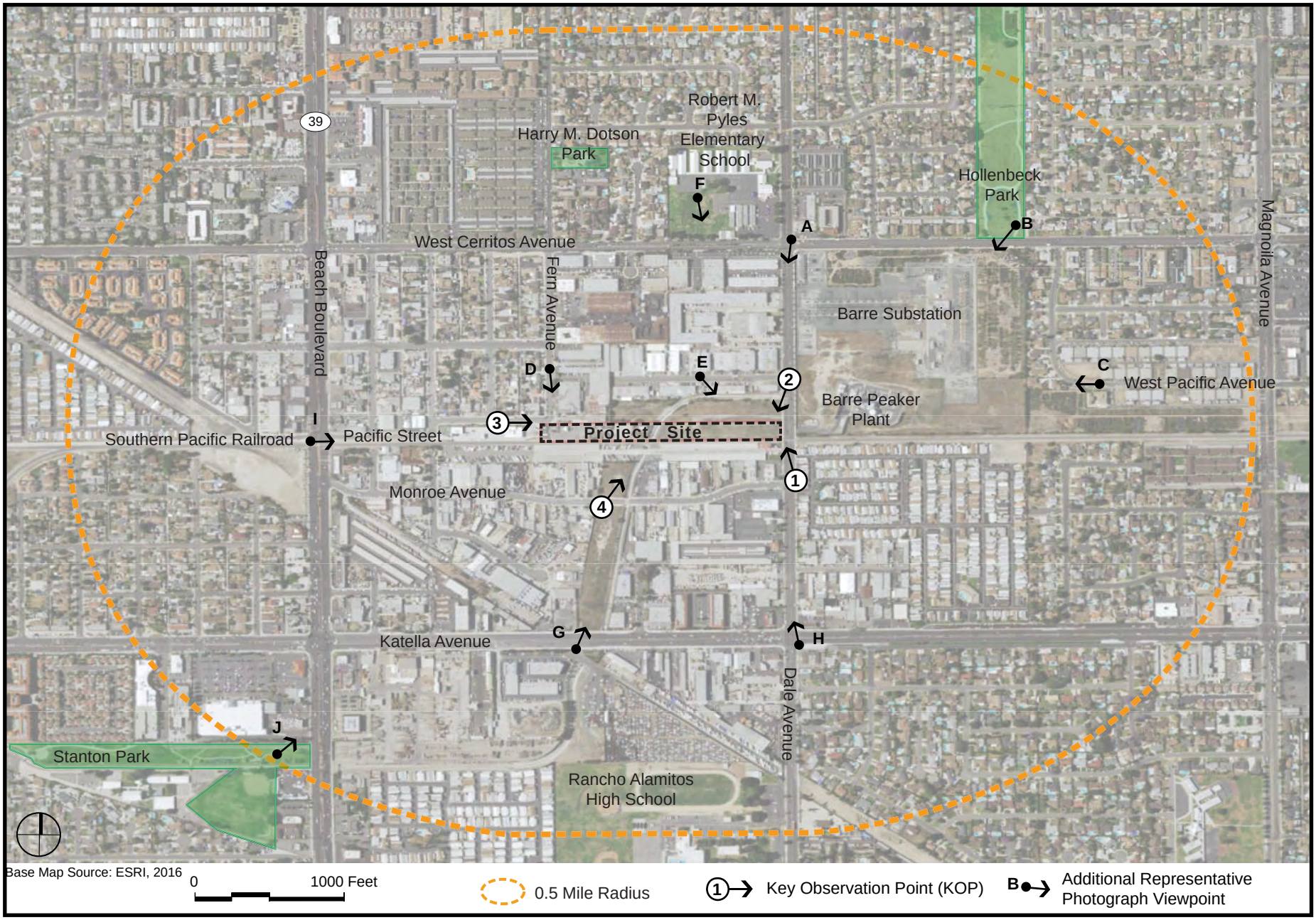
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 2.1-1b - CH2M

VISUAL RESOURCES - FIGURE 6

Stanton Energy Reliability Center - Key Observation Point Map



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-2 - CH2M

VISUAL RESOURCES - FIGURE 7a

Stanton Energy Reliability Center - Existing View from Dale Avenue at Monroe Avenue (KOP 1)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-5a - CH2M

VISUAL RESOURCES - FIGURE 7b

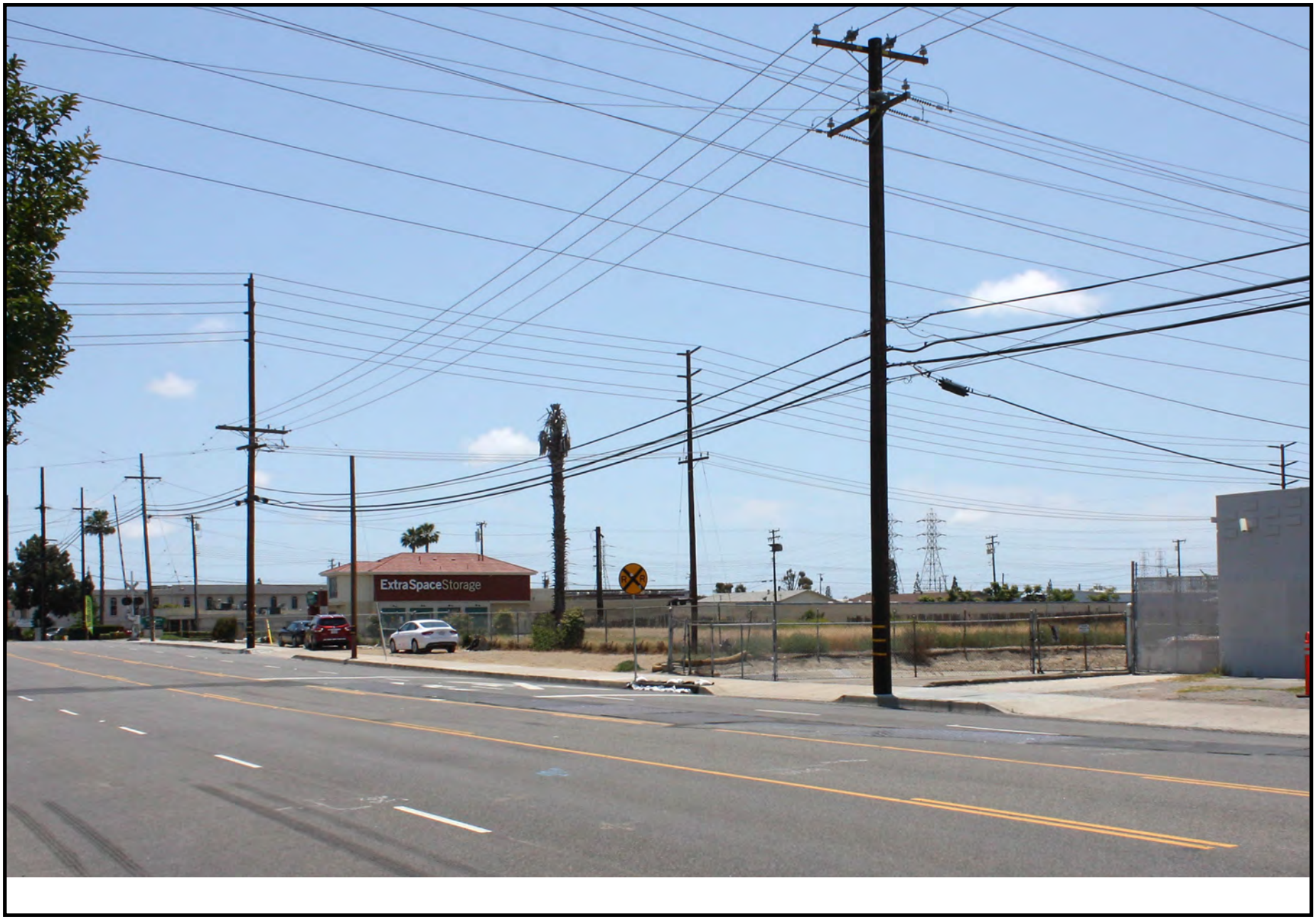
Stanton Energy Reliability Center - Visual Simulation from Dale Avenue at Monroe Avenue (KOP 1)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-5b - CH2M

VISUAL RESOURCES - FIGURE 8a

Stanton Energy Reliability Center - Existing View from Dale Avenue at Standustrial Street (KOP 2)



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-6a - CH2M

VISUAL RESOURCES - FIGURE 8b

Stanton Energy Reliability Center - Visual Simulation from Dale Avenue at Standustrial Street (KOP 2)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-6b - CH2M

VISUAL RESOURCES - FIGURE 9a

Stanton Energy Reliability Center - Existing View from Pacific Street at Sycamore Avenue (KOP 3)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-7a - CH2M

VISUAL RESOURCES - FIGURE 9b

Stanton Energy Reliability Center - Visual Simulation from Pacific Street at Sycamore Avenue (KOP 3)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-7b - CH2M

VISUAL RESOURCES - FIGURE 10a

Stanton Energy Reliability Center - Existing View from Monroe Avenue (KOP 4)

SOURCE: AFC, Figure 5.13-8a - CH2M

VISUAL RESOURCES - FIGURE 10b

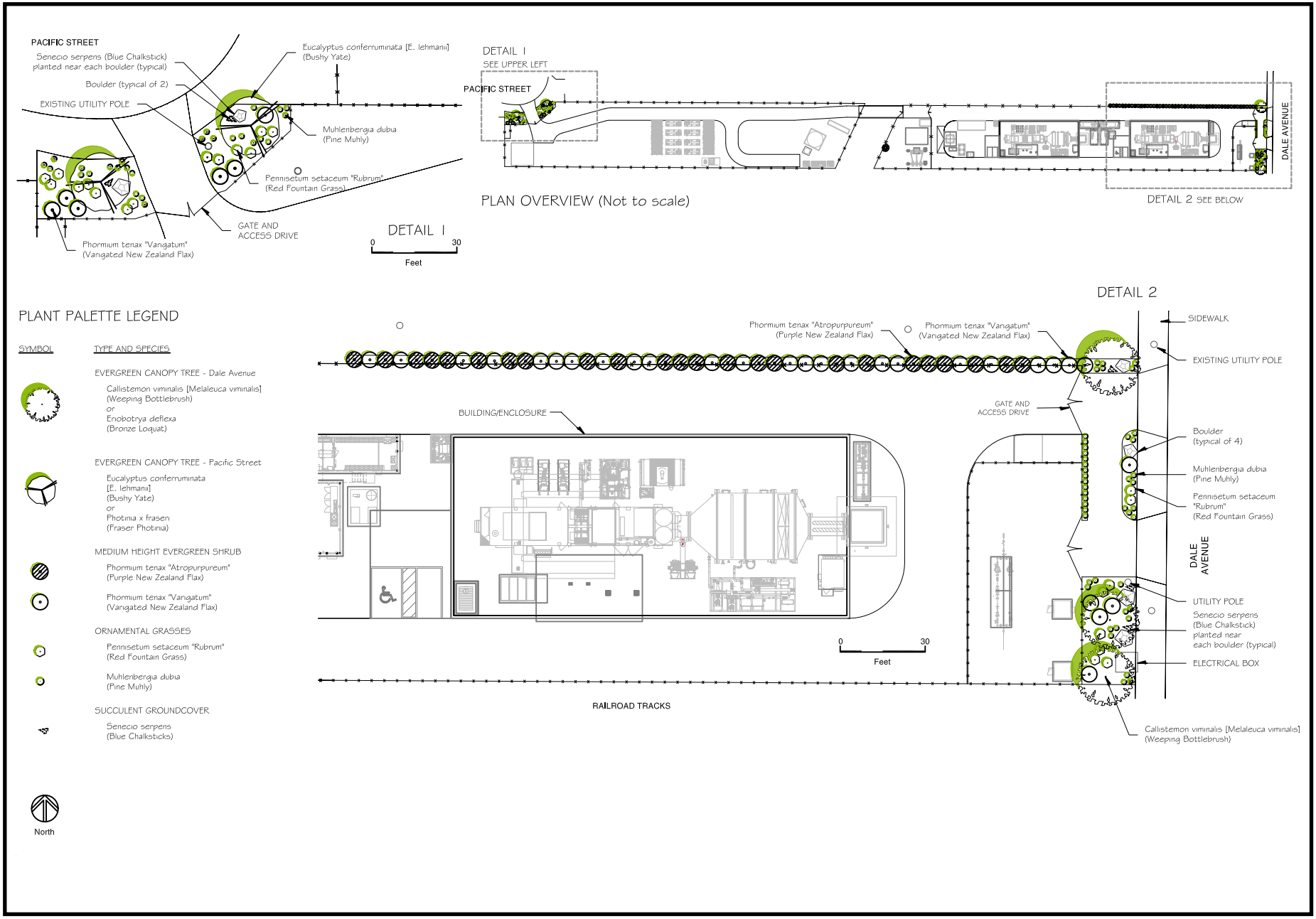
Stanton Energy Reliability Center - Visual Simulation from Monroe Avenue (KOP 4)

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC, Figure 5.13-8b - CH2M

VISUAL RESOURCES - FIGURE 11a

Stanton Energy Reliability Center - Conceptual Landscape Plan Map



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Appendix, Figure 5.13B - Sheet 1 of 2

VISUAL RESOURCES - FIGURE 11b

Stanton Energy Reliability Center - Conceptual Landscape Plan Specifications

LANDSCAPE CONCEPT

The landscape concept for the Stanton Energy Reliability Center incorporates a combination of evergreen trees, medium size shrubs, and ornamental grasses. The landscape plan calls for medium-height evergreen canopy trees along the Dale Avenue and Pacific Street frontages, within the area located between the sidewalk and the perimeter fence. Within this landscaped area, there will also be a limited number of shrubs, clustered informally with small and medium height ornamental grasses. To add visual interest, boulders accented by succulent groundcover will also be placed in the landscaped areas. In addition, a row of distinctive, medium height evergreen shrubs will be planted along the northern edge of the site, near Dale Avenue. The landscaping will enhance the site's appearance and partially screen new fencing and structures.
The suggested plant palette includes drought tolerant species that are appropriate to the regional setting and local site conditions.

NOTES:

1. Landscape layout is preliminary and subject to change based on final engineering and other factors.
2. A drip irrigation system will be installed to provide regular watering of new landscaping.
3. Decomposed granite to a depth of 3 to 4 inches will be applied within the planting strip for water conservation and weed suppression.
4. All planting shall meet SERC safety, operations, and maintenance requirements , including clearance requirements for underground and overhead conductors.
5. All landscaping and irrigation shall conform to applicable landscape related City and Regional Standards.

EVERGREEN CANOPY TREE - Dale Street

Callistemon viminalis [Melaleuca viminalis]
Photo source: Treenames.net / Shendan Landscaping LLC. 2016

Enobotrya deflexa (Bronze Loquat)
Photo source: California Polytechnic State University / Selectree 2016

EVERGREEN CANOPY TREE - Pacific Street

Eucalyptus conferruminata [E. lehmanii] (Bushy Yate)
Photo source:
California Polytechnic State University / Selectree 2016

Photinia x fraseri (Fraser Photinia)
Photo source:
City of Los Angeles,
Street Tree Selection Guide 2016

MEDIUM HEIGHT EVERGREEN SHRUB

Phormium tenax (New Zealand Flax)
Photo source: Environmental Vision 2005

ORNAMENTAL GRASSES

Pennisetum setaceum "Rubrum"
(Red Fountain Grass)
Photo source: Environmental Vision 2016

Muhlenbergia dubia (Pine Muhly)
Photo source: UC Master Gardeners 2016

SUCCULENT GROUNDCOVER

Senecio serpens (Blue Chalksticks)
Photo source: Monrovia 2016

PLANT SIZE AND QUANTITY ESTIMATE

TYPE AND SPECIES	ESTIMATED QUANTITY	CONTAINER SIZE	GROWTH RATE	APPROXIMATE HEIGHT AT 5 YEARS	APPROXIMATE MATURE HEIGHT / WIDTH	APPROXIMATE TIME TO MATURITY
EVERGREEN CANOPY TREE - Dale Avenue						
Callistemon viminalis [Melaleuca viminalis] (Weeping Bottlebrush)	3	15 Gallon or 24" Box	2' / year	16'	20'-35' / 20'-30'	10 - 15 years
or Enobotrya deflexa (Bronze Loquat)		15 Gallon or 24" Box	3' / year	20'	15'-25' / 15'-25'	5 - 8 years
EVERGREEN CANOPY TREE - Pacific Street						
Eucalyptus conferruminata [E. lehmanii] (Bushy Yate)	2	15 Gallon or 24" Box	2'-3' / year	18'	12'-25' / 10'-25'	10 years
or Photinia x fraseri (Fraser Photinia)		15 Gallon or 24" Box	2'-3' / year	18'	12'-20' / 8'-12'	5 - 8 years
MEDIUM HEIGHT EVERGREEN SHRUB						
Phormium tenax "Vangatum" (Vangated New Zealand Flax)	28	1 Gallon or 5 Gallon	-	6'	6' / 6'	
Phormium tenax "Atropurpureum" (Purple New Zealand Flax)	31	1 Gallon or 5 Gallon	-	6'	6' / 6'	
ORNAMENTAL GRASSES						
Pennisetum setaceum "Rubrum" (Red Fountain Grass)	22	1 Gallon	-	4'-5'	4'-5' / 4'-5'	
Muhlenbergia dubia (Pine Muhly)	70	1 Gallon	-	1'-3'	1'-3' / 2'-3'	
SUCCULENT GROUNDCOVER						
Senecio serpens (Blue Chalksticks)	18	4" or 1 Gallon	-	1'	1' / 2'-3'	

Tree growth and size estimates based on information contained in: Reimer, Jeffrey L. and W. Mark. "SelecTree: A Tree Selection Gu http://selectree.calpoly.edu/ (site visited August 16, 2016.)
Shrub size estimates based on information contained in: Brenzel, Kathleen Norris. Sunset Western Garden Book. Menlo Park, CA: Sunset Publishing Corporation, 2001.
and
San Marcos Growers. http://www.smgrowers.com/ (site visited August 16, 2016.)

VISUAL RESOURCES

WASTE MANAGEMENT

Testimony of Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

The purpose of this staff analysis is to assess the issues potentially associated with handling and disposal of the wastes generated from construction and operation of the proposed Stanton Energy Reliability Center (Stanton or project) and evaluate 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.

The project would be located on an approximately 4-acre site zoned for and surrounded by industrial uses to the north and south with medium-density residential uses to the southeast and northwest. The applicant has identified the expected waste streams in the expected quantities and also discussed the adequacy of available disposal facilities. Staff has evaluated the applicant's management plan, considers it adequate for compliance, and has proposed specific conditions of certification to ensure implementation.

INTRODUCTION

This Final Staff Assessment (FSA) presents an analysis of issues potentially associated with handling the wastes generated from building and operating the proposed Stanton Energy Reliability Center (Stanton or project). The analysis 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 document. 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 Stanton's wastes would be in compliance with all applicable LORS. Compliance with such LORS will 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 Stanton 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 9) 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 use 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.

Applicable LORS	Description	Discussion/ Conclusions
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-4**, **-6**, 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 South Coast AQMD 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.

Applicable LORS	Description	Discussion/ Conclusions
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 specific mitigation.
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,** -**9** and **-10** 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 waste 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	**Compliant.** Stanton 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 also

Applicable LORS	Description	Discussion/ Conclusions
	manifests before transporting the waste off site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous 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.	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, -9** and **-10** 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	**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,** -**9,** and **-10**

Applicable LORS	Description	Discussion/ Conclusions
	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 Program Agencies (CUPAs). Orange County Environmental Health Division's Hazardous Materials Program is the area's 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.	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. (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** would ensure the project owner 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.

Applicable LORS	Description	Discussion/ Conclusions
Title 22, CCR, § 67100.1 et seq. Hazardous Waste Source Reduction and Management Review.	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.	**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 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 Asbestos Notification Form to the CPM and SCAQMD for review prior to removal and disposal of asbestos. All friable asbestos (Class I) collected during demolition activities would 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,** -**9** and **-10** require the project owner to ensure that the project site is investigated and remediated as necessary; demonstrate that project wastes are

Applicable LORS	Description	Discussion/ Conclusions
		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		
Orange 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 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. Ensures inspection 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 would recycle and/or dispose 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,** -**9,** and **-10** which 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 clean-up of future spills or releases of hazardous substances or wastes are properly reported, cleaned-up, and remediated as necessary.

SETTING

PROJECT AND SITE DESCRIPTION

Stanton is proposed as a natural gas-fired, simple-cycle combustion turbine power plant rated at a nominal generating capability of 98 megawatts (MW). It would be co-located with 10-MW battery unit arrays for storage of electricity. The proposed site consists of two parcels that encompass a total of 3.978-acres that are zoned for industrial uses. The address is 10711 Dale Avenue in the city of Stanton in Orange County, California. The western portion of the site is currently developed and has a wooden garage building, an asphalt-paved parking area, an unpaved truck parking area, and a wooden pallet storage area. The western portion is currently occupied by a trucking company and a wooden pallet storage company. The eastern portion is vacant and undeveloped. There is more information on the area's land use in the **Land Use** and **Project Description** sections of this FSA.

The most important of the project-related waste include the following:

- Demolition asphalt and concrete waste rubble from the western portion of the project site;

- Soil and other grading-related wastes from construction of two new GE Energy power-block LM6000 PC combustion turbine generators which would be equipped with a selective catalytic reduction (SCR) system for air emission control;
- Wastes from operation of the project's proposed Lithium-ion batteries system;
- Wastes from construction of the interconnecting 0.35-mile, 66-kV underground line between the project and Southern California Edison's (SCE) Barre Substation to the east;
- Wastes associated with construction of the natural gas pipeline connecting Stanton to Southern California Gas Company's existing high-pressure natural gas transmission pipeline via 2.7 miles of new 12-inch or 16-inch diameter pipe;
- Industrial wastewater from project operation; and
- Wastes from temporary construction facilities which would include a 2.89-acre worker parking and laydown area approximately 350 feet south of the project site on Dale Avenue (SERC 2016a, page 5.11-1).

The applicant has listed these wastes as hazardous or nonhazardous, in expected quantities, and according to applicable disposal methods (SERC 2016a Table 5.14-1). These wastes would include wood and metal pieces, the noted concrete and asphalt waste, empty containers, asbestos debris, heavy metal dust, universal wastes, batteries, waste oil filters, and solvents and containers. Those that are classified as hazardous would be disposed of accordingly while the nonhazardous non-recyclables would be disposed of in Class III landfills such as the Olinda Landfill.

Long-term operation and maintenance of the project 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 specific hazardous wastes which would be returned to the manufacturer for recycling if possible or disposed of in a Class I landfill (SERC 2016a, p 5.14-10). Such waste-generating replacement of SCR units occurs only about once every 15 years.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This section addresses the following issues about the project: (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 the 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 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 Stanton, staff reviewed the applicant's proposed solid and hazardous waste management methods (SERC 2016a, 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 normally 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 the project. 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 Stanton site was conducted in August 2016, by Advantage Environmental Consultants 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 (SERC 2016a, 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 project 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 any sampling of any physical medium. The survey typically involves the following main tasks:

- Review of readily available geologic and hydrogeological literature;
- A reconnaissance of the project site and properties for signs of chemical contamination;
- Interviews with individuals with historical knowledge of the project site; and
- Public agency records review.

As reported by the applicant, the Stanton Phase I ESA established the need for a Phase II ESA to further assess the potential for contamination and related chemical exposures during construction or within facility buildings. The Phase II assessment suggested a lack of contamination of potential health significance but given the history of the site as a place of past industrial activity, staff is unable to rule out any contaminant discovery from future site grading and other construction activities.

To ensure that the applicant would have procedures in place to properly handle any contaminated soil, staff recommends a Condition of Certification **WASTE-1** requiring the project owner to prepare (and submit to the Energy Commission compliance project manager (CPM) 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 sufficient 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 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.

Construction Impacts and Mitigation

Activities related to demolition, site preparation, and construction for the proposed project and associated facilities would last approximately 12 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 (SERC 2016a, pages 5.14-2 and 5.14-3). Most of such wastes are the ordinary solid nonhazardous waste or garbage with recyclable fractions.

Nonhazardous Wastes

Before demolition and construction can begin, staff considers it necessary in all cases for the project owner to prepare a Construction and Demolition (C&D) Debris Recycling Plan to ensure proper handling of the generated nonhazardous wastes. The California Integrated Waste Management Act of 1989 (AB 939) is the law that requires local governments to ensure that solid wastes are reduced, reused, recycled or diverted from landfills as much 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 or recycle at least 50 percent of wastes generated during construction. The minimum reduction level for Orange County is 65 percent which could be achieved through implementation of staff's recommended **WASTE-4.**

The applicant estimates that about 95 tons of nonhazardous wastes would be generated from Stanton construction (SERC 2016a, p 5.14-2). In addition, concrete and asphalt rubble to be removed from the site is estimated at 600 tons (320 cubic yards) and 12,000 tons (7,000 cubic yards) of soil. As noted earlier, such 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 presently required diversion level for Orange County is the noted 65 percent of the waste and the project owner intends to comply (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, section 17200 et seq.

Implementing staff's recommended **WASTE-4** would facilitate proper management of project demolition and construction wastes since Orange County maintains an integrated countywide waste management program. **WASTE-4** would require the project owner to submit copies of the related paperwork to the Orange County Public Works/Planning Department and the CPM for review and approval.

Liquid nonhazardous wastes would also be generated during construction. These would include sanitary wastes, dust suppression water, storm water, and equipment-wash water. The applicant intends to ensure that sanitary wastes would be collected in portable, self-contained toilets and pumped out periodically for disposal at an appropriate facility. Contaminated equipment wash or test water would be stored in a designated area, tested to determine if they are 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.

Hazardous Wastes

The hazardous solid wastes generated from project construction could include the previously noted 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 South Coast Air Quality Management District (SCAQMD) which requires the owner of a demolition or renovation project to submit a Notification of Demolition or Renovation Form for approval before any asbestos stripping or removal work begins.

As noted by the applicant (SERC 2016a, p 5.14-10) the project 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. Such wastes 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 (SERC 2016a, 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.

Operations Impacts and Mitigation

The applicant has identified the hazardous and nonhazardous wastes expected from Stanton's long-term operation. As noted, the operational wastes would include routine maintenance-related materials such as 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 (SERC 2016a, p 5.14-5). All components would be recycled to the extent possible and non-recyclable constituents 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.

Impacts on Existing Waste Disposal Facilities

The hazardous and nonhazardous wastes from Stanton construction and operation would add to the total of wastes generated per year in Orange County, California.

Impacts of Nonhazardous Wastes

As previously noted, the applicant estimates that approximately 95 tons of solid, nonhazardous wastes would be generated during project construction with 10 tons generated per year during operations. Such nonhazardous wastes would be disposed of in California Class III landfills, three of which are listed in **Waste Management Table 2,** together with the two available Class I landfills. As the applicant noted, 4.7 million tons of solid nonhazardous waste was landfilled in Orange County in 2015, meaning that Stanton's yearly contribution to the county's landfilled solid wastes would be minimal.

The applicant proposes to dispose of about 12,000 tons of soil and 600 tons of concrete and asphalt demolition wastes at the Olinda Landfill. The Olinda Landfill is permitted to accept up to 8,000 tons per day of refuse but typically accepts about 7,000 tons per day. Current capacity projections suggest that the landfill can remain operational through 2030 and that the landfill would be able to bury refuse on 453 out of 565 acres.

On May 10, 2018, a SERC representative (SERC 2018m) confirmed with Jeovany Gomez, a Customer Service Manager in OCWR's Soils Programs Department, that the Olinda Alpha Landfill can receive excess soils from the SERC project. For planning purposes, Mr. Gomez was asked to confirm that up to 8,000 cubic yards (or 13,000 tons) of soil could be received by the landfill from the SERC project. According to Mr. Gomez the soils export quantities requested by SERC would be acceptable to OCWR.

Impacts of Generated Hazardous Wastes

According to the applicant (SERC 2016a, p. 5.14-4, 5.14-5 and 5.14-8), hazardous wastes generated during demolition, construction, and operation would be minimal and recycled to the extent practicable. Any wastes that cannot be recycled would be transported off site to a permitted Class I landfill. There would be up to 145 facilities in California available to accept such wastes. 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**).

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 hazardous wastes from Stanton would not significantly impact the capacity or remaining lives of California's Class I facilities.

Waste Management Table 2
Solid Waste Recycling/Disposal Facilities Available for SERC

Landfill/Transfer Station	Location (City)	Remaining Capacity (Cubic yards)	Estimated Closure Date
Class III – Nonhazardous			
Prima Descheca Sanitary Landfill	San Juan Capistrano, CA	87.39 million	2067
Olinda Alpha Sanitary Landfill	Brea, CA	34.2 million	2021
Frank R. Bowerman Sanitary Landfill	Irvine, CA	205 million	2052
Class I – Hazardous Waste			
Clean Harbors Buttonwillow (Class I)	Kern, CA	13.35 million	2040
Waste Management Kettleman Hills (Class I) Phase 3	Kings, CA	5 million	2044

Source: SERC 2016a pages 5.14-6 and 5.14-7 and Table 5.14-3

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 the project 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 noted by the applicant, Stanton's nonhazardous solid waste of cumulative significance would be the 10 tons generated per year from routine operations (SERC 2016a, p5.14-8). Given the amounts of solid waste landfilled per year in Orange County (4.7million tons in 2015 for example as noted by the applicant), and the available 326.58 million cubic yards of disposal space (as shown in **Waste Management Table 2**), it could be seen that Stanton's contribution would be cumulatively 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. **Environmental Justice Figure 2** and **Table 3** show the presence of an EJ population based on income level. The presence of an EJ population raises concerns for potential disproportionate waste management impacts from Stanton's construction and operation. A disproportionate waste management impact on an EJ population could occur if a project significantly impacted landfill capacity. Staff's assessment focused on the following aspects of the past and proposed waste management practices at the project site:

Past or Existing Contamination

- As discussed earlier, there are no readily discernible signs of old or new chemical contamination at the site. In addition, staff has recommended specific conditions of certification requiring additional cleanup of contaminated soils if encountered during construction and demolition activities.

Status as a Waste Generating Facility

- As previously noted, the project would be categorized as a licensed hazardous waste generator and would thus be required to comply with LORS that would ensure safe storage and disposal of hazardous wastes. Staff has also 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 construction and demolition would be segregated, where practical for recycling, and disposed of in a facility with adequate capacity for disposal of nonhazardous wastes. Staff has also included 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 waste disposal sites or facilities verified to be in compliance with current LORS. In addition, there would be no increase in the number of nonhazardous waste generators and facilities in the area from project-related demolition, construction, or operations activities given the adequacy of disposal spaces.

Disadvantaged Communities

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 percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts. 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 disadvantaged community census

tracts in a 6-mile radius of the project are presented in **Environmental Justice Table 4** for each of the following environmental stressors that relate to waste management: 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. Staff concludes from the project's 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. **Environmental Justice Figure 1** presents the EJ population based on a minority population and the location of the disadvantaged community census tracts within a six-mile radius of the facility. Staff's disadvantaged community census tract of focus is the one in which the project is located (census tract 6059087803) as the waste management-related indicators are correlated to the proposed facility and the site is where the project impacts would occur. 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. Such toxic releases could pose a risk of cancer or non-cancer effects as discussed in the health risk assessment (HRA) in staff's **Public Health** section of this assessment. The proposed facility would be licensed as a hazardous waste generator therefore; the applicant would be required to obtain the related generator number to comply with LORS ensuring safe storage and disposal of hazardous wastes of concern. As previously discussed, staff regards the waste management for the project as adequate for compliance on site and at the disposal sites, and that waste handling and disposal would not pose a significant health risk to the disadvantaged community census tract or significantly contribute to the 93.75 percentile ranking for the disadvantaged community census tract. Also, if contaminated soils were to be encountered during construction, the related conditions of certification would ensure that they are remediated in accordance with applicable LORS. Remediation, if necessary, would reduce the burden on the disadvantaged community census tract.
- **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 82.11, there are approximately 18 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 project site and that any impacts on the disadvantaged community census tract, would not contribute significantly to the number of existing facilities in need of cleanup.

- **Hazardous Waste Generators and Facilities:** This indicator reflects the number of 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 noted earlier, the project would be licensed as a hazardous waste generator and required to obtain the compliance generator number necessary for handling and disposal of hazardous wastes. At a percentile of 85, there are approximately 15 percent of census tracts in California with more hazardous waste generators and facilities. Staff has included specific conditions of certification to ensure implementation of the related management plan as proposed by the applicant and concludes that the project's toxic air emissions would not significantly add to the disadvantaged community census tract pollutant burden.
- **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 percentile for the census tract is 58.55. The project would not dispose of solid waste on site; rather the solid waste would be disposed of in licensed solid waste facilities in San Juan Capistrano, Brea, and Irvine. 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 and thus not contribute to the disadvantaged community census tract.

Environmental Justice Conclusions

Staff concludes that management of the waste generated during demolition, site clearance, construction and operation of the 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 onsite waste would be subject to LORS and proposed conditions of certification.

Staff concluded that the waste management impacts from the proposed project facility would occur below levels of health significance and these effects would not have a significant cumulative contribution to the indicators of toxic releases from facilities, cleanup sites, hazardous waste generators and facilities, and solid waste sites and facilities in the disadvantaged community census tract of staff's focus.

COMPLIANCE WITH LORS

The Energy Commission staff concludes that the proposed project would comply with all LORS regulating the management of hazardous and nonhazardous wastes during demolition of the existing on-site structures 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 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.

RESPONSE TO COMMENTS ON THE PSA

On April 30, 2018, the applicant provided comments on the PSA and additional information on proposed changes to the project. As described in the AFC the site has near-surface unconsolidated soils. Through further geotechnical investigation and foundation design optimization the applicant has determined that the soils should be over-excavated. The over-excavation results in a fill imbalance necessitating the need for off-site fill disposal. In addition to the export of excess soils, the project would also export the asphalt concrete waste from the demolition of hardscape on the westernmost parcel.

The excess soils and asphalt concrete waste would be exported to the Olinda Alpha Landfill located at 1942 North Valencia Avenue in Brea. Orange County Waste and Recycling manages the Olinda Alpha Landfill and has a soils disposal program. SERC, LLC proposes a new Condition of Certification **WASTE-10** to ensure the disposal activities will comply with the Orange County Waste and Recycling requirements. Staff concurs that this proposed condition and applicable state and local LORS would ensure compliance with the Orange County requirements for disposal of this waste.

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 project site. Given the types of commercial/industrial land use on the western portion of the site there is a possibility there is unrecognized contamination that could exist. Use of staff's recommended Soil Management Plan should ensure that any discovered soil contamination would be remediated as necessary. Staff's recommended Conditions of Certification **WASTE-1**, **-2**, **-3**, **-5**, **-6**, **-7**, **-9** and **-10** 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 stored 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.
- 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 a 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 the project's nonhazardous wastes is more than 326 million cubic yards. At 13.3 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 Stanton would have a combined remaining capacity of more than 15 million cubic yards. The hazardous wastes generated by Stanton would occupy less than one percent of the remaining permitted capacity. Therefore, impacts from disposal of SERC'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, construction and operation of the project would not result in any significant adverse impacts, and would comply with applicable LORS if the waste management practices and mitigation measures proposed by the applicant in the AFC and staff's recommended conditions of certification are implemented.

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. The SMP shall be prepared by a California Registered Geologist or a California Registered Civil Engineer with sufficient 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. Where actions are required in accordance with the SMP, an 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:

1. Land use history including description and locations of any known contamination.

2. The nature and extent of any previous investigations and remediation at the site.

3. The nature and extent of any unremediated contamination at the proposed site.

4. 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.

5. Names and positions of individuals involved with soils management and their specific roles.

6. An earthwork schedule.

7. A description of protocols for the investigation and evaluation of any previously unidentified contamination that may be encountered in time. The protocol shall be for temporary and permanent controls that may be required to reduce exposure to on-site workers, visitors, and the public.

8. A site-specific Health and Safety Plan (HSP) to be implemented by all contractors at the site. The HSP shall 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 shall address the possibility of encountering subsurface chemical contamination and include procedures to protect workers and the public.

9. Hazardous waste determination and disposal procedures for known and previously unidentified contamination.

10. Requirements for site-specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.

11. 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. An 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 Orange County's Public Works/Planning Department for review, and to the CPM for review and approval. The plan shall include at a minimum, the following information:

1. a description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications;

2. 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 plan; a method for collecting weigh tickets or other methods for verifying the volume of transported and location of waste disposal; and,

3. a method for reporting to demonstrate project compliance with construction waste diversion requirements of 65% pursuant to the Cal Green Code and Orange County's Construction & Demolition Program.

Verification: The project owner shall submit the C & D Environmental Resources Management and Recycling Plan to Orange County's Public Works Department for review and comment and 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, the project owner shall survey for asbestos-containing material (ACM) and notify the CPM of the results. In the case of a need to remove such material, the project owner shall complete and submit a copy of a South Coast Air Quality Management District Notification of Demolition or Renovation Form to the CPM as related to asbestos and other materials.

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. In the case of asbestos removal, 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, or 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:

1. a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;

2. 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;

3. 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;

4. 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

5. 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.

WASTE-10 Prior to transportation of soils for disposal at the Olinda Alpha Landfill, the project owner shall obtain approval to dispose of soils at the Olinda Alpha Landfill from Orange County Waste and Recycling.

Verification: At least 30 days prior to transportation of soils for disposal to the Olinda Alpha Landfill, the project owner shall submit a Soils Information Form to Orange County Waste and Recycling and the CPM.

At least 5 days prior to transportation of soils for disposal to the Olinda Alpha Landfill, the project owner shall submit to the CPM Orange County Waste and Recycling's correspondence documenting its ability to accept the soils for disposal.

REFERENCES

SERC 2016a – Stanton Energy Reliability Center LLC (TN 214206-2 to 27) Application for Certification, Vol I dated October December 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC 2016b – Stanton Energy Reliability Center (TN214207-1 to 37). Application for Certification Appendices Vol II. Submitted to CEC/Docket Unit on October 272016.

SERC 2018m – CH2M (TN 223425)**.** Stanton Energy Reliability Center's Responses to Data Requests A73 through A85, dated May 2018. Submitted to CEC/Docket Unit on May 11, 2018.

WORKER SAFETY AND FIRE PROTECTION

Testimony of Brett Fooks, PE and Geoff Lesh, PE

SUMMARY OF CONCLUSIONS

Staff concludes that the proposed Stanton Energy Reliability Center (Stanton or project) would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards (LORS). Staff recommends the project owner provide 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 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 Orange County Fire Authority (OCFA) has stated that its ability to respond to emergency calls would not be significantly impacted by the construction and operation of the Stanton project (OCFA 2016a).

INTRODUCTION

Worker safety and fire protection are 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 and may face hazards that can result in accidents and serious injury. Protective measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Final Staff Assessment (FSA) is to assess the worker safety and fire protection measures proposed by Stanton and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description	Stanton 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** requires 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** requires the project owner to implement an additional layer of worker safety during construction.
State		
Title 8, California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.	**Consistent.** Staff's 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.
Title 24, California Code of Regulations.	Title 24 incorporates the current edition of the International Building and Fire Codes (with changes).	**Consistent.** See discussion on the fire authority below.
Local (or locally enforced)		
City of Stanton Municipal Code, Title 17 Fire, Chapter 17.08.010	City of Stanton Municipal Code, Title 17 Fire, Chapter 17.08.010	**Consistent.** See discussion on the fire authority below.
National Fire Protection Association (NFPA) 850	This industry standard of the National Fire Protection Association (NFPA 850) addresses fire protection at electrical generating stations.	**Consistent. WS-7** requires adherence to this NFPA industry standard.

SETTING

The proposed facility would be located in the city of Stanton within an industrial area that is located within the service area of the Orange County Fire Authority (OCFA). There are a total of 72 fire stations within the OCFA's coverage area with one fire station within the city of Stanton. The closest station to the Stanton site is Station #46 of the OCFA located at 7871 Pacific Street, approximately 1.0 mile away. The total response time from the moment a call is made to the point of arrival at the site would be approximately 5 minutes. The next closest station is the city of Anaheim Station #4, located at 2736 West Orange Avenue, approximately 2.0 miles away, which would respond in about 10 minutes. The Anaheim Fire and Rescue Team which staffs the Anaheim Station #4 has an automatic mutual aid agreement with the OCFA.

The first responders to a hazardous materials incident would be from OCFA Fire Station #46. If needed, a full hazardous material response would be provided by the OCFA Hazardous Materials Response Team (OCFA-HMRT) located at OCFA Station #79, located at 1320 East Warner, approximately 18.0 miles away. The OCFA-HMRT is capable of handling any hazardous materials-related incident at the proposed facility.

In addition to construction and operations worker safety issues, the potential exists for worker exposure to contaminated soil during site preparation. The Phase I and II Environmental Site Assessments conducted for this site in 2016 concluded that no hazards or contaminants exist on-site that would warrant additional environmental remediation (SERC 2016a, Section 5.14.1.1). To address the possibility that soil contamination would be encountered during construction of Stanton, 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, then the 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 demolition, construction, commissioning, and operations activities, and

2. Availability of, and potential impacts on, fire prevention/protection, emergency medical response, and hazardous materials spill response services during demolition, 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.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire protection and life safety systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine whether they feel that local resources are adequately trained, manned, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on the local fire department. If so, staff will 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 construction, commissioning, and operation of facilities. Workers at the proposed Stanton project would be exposed to loud noises, moving equipment, trenches, confined space entry, and egress problems. The workers may experience falls, trips, burns, lacerations, being struck by objects, and numerous other potential 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 the facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program would be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that would be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

The proposed Stanton project encompasses construction and operation of a natural gas-fired facility that contains an energy storage component. Workers would be exposed to hazards typical of construction and operation of a gas-fired, simple-cycle facility with the additional hazards posed by a large amount of combustible lithium 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:

- Electrical Safety Program
- Motor Vehicle and Heavy Equipment Safety Program
- Forklift Operation Program
- Excavation/Trenching Program
- Fall Protection Program
- Scaffolding/Ladder Safety Program
- Articulating Boom Platforms Program
- Crane and Material Handling Program
- Housekeeping and Material Handling and Storage Program
- Respiratory Protection Program
- Employee Exposure Monitoring Program
- Hand and Portable Power Tool Safety Program
- Hearing Conservation Program
- Back Injury Prevention Program
- Hazard Communication Program
- Heat and Cold Stress Monitoring and Control Program
- Pressure Vessel and Pipeline Safety Program
- Hazardous Waste Program
- Hot Work Safety Program
- Permit-Required Confined Space Entry Program
- Lockout/Tagout Energy Control Program

The application for certification (AFC) adequately outlines the needed programs (SERC 2016a, Section 5.16.2.3.1). Prior to the start of construction of Stanton, detailed programs and plans would be provided to the California Energy Commission compliance project manager (CPM) and to the OCFA pursuant to Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at Stanton, the Operations and Maintenance Safety and Health Program would be prepared. This operational safety program would include the following programs and plans:

- Injury and Illness Prevention Program (Cal Code Regs., tit. 8, § 3203)
- Fire 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 to be developed by the project owner for Stanton 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 (SERC 2016a, Section 5.16.2.3.2). Prior to operation of Stanton, all detailed programs and plans would be provided to the CPM and OCFA pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

The applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. Both safety and health programs would comprise 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 (SERC 2016a, Section 5.16.2.3.2):

- 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;
- 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 OCFA 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 OCFA for review and comment, to satisfy 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 Stanton 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 (SERC 2016a, Section 5.16.2.3.2).

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 and operations safety programs would address safe work practices. The components of these programs include, but are not limited to, the programs found in the subsection “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 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 Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors in four areas:

- to improve their safety and health performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between, and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and Cal/OSHA standards, documents, and directives. A Competent Person is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3,** which would require the project owner to designate and provide a site Construction Safety Supervisor.

Accidents, fires, and two worker deaths 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;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility, but too close to the perimeter fence; and
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor available to do on-site verification checks of ongoing compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the 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 all power plants certified by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged it in questions about the team's findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Fire Hazards

During construction and operation of the Stanton facility, 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 occur 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 OCFA'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 OCFA (SERC 2016a, Sections 2.1.13 & 5.16.2.4).

Construction

During 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 (SERC 2016a, Section 5.16.2.3.1), which would be reviewed and commented on by the OCFA and reviewed and approved by the CPM.

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the latest 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 stated in the AFC that Stanton would be built to the NFPA 850 standard and staff concurs with this assessment. For power plants permitted by the California Energy Commission, the 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 Stanton. 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 water supply would be connected to two municipal sources supplied by the Golden State Water Company with one from Pacific Street and one from Dale Avenue (SERC 2016a, Section 2.1.13 & SERC 2017b A55). A carbon dioxide or dry chemical fire protection system would be provided for the combustion turbine generators and accessory equipment compartments. The fire protection system would have fire detection sensors and monitoring equipment that would trigger alarms and automatically actuate the suppression systems.

In addition to the fixed fire protection system, appropriate class of service portable extinguishers and fire hydrants would be located throughout the facility at code-approved intervals (SERC 2016a, Section 2.1.13). These systems are standard requirements of NFPA and the California Fire Code, and staff has determined that they would ensure adequate fire protection.

The project owner proposes having two separate entrances to the Stanton site with one of the entrances being the secondary emergency access. Staff concurs with the project owner 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 also asked the OCFA about their policy for emergency access to the site and the OCFA has stated that a second emergency entrance would be needed (OCFA 080217). Therefore, in order to ensure the adequate emergency access to the site by the fire department, 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, a secondary access to the site that meets the requirements of the Stanton Municipal Code for emergency response vehicles.

The Stanton project would install an energy storage system rated at 20 MW using lithium ion batteries. The lithium ion batteries would be housed in two separate outdoor enclosures. The batteries would be configured as modules of multiple packages, with each package containing many individual lithium ion battery cells plus battery protection circuits in a sealed container. The battery enclosures would be kept away from any heat sources. Staff asked for additional information on the fire protection and life safety systems that would be provided. The project owner stated that the enclosures would

make use of a FM200 (a chemical-based fire suppressant) or equivalent fire suppression system (SERC 2017b). In addition to the chemical fire suppression, each battery would have its temperature monitored by a battery indication and control system (BICS). The BICS would continually monitor all temperatures and determine the level of fire prevention response, if any, needed. If any temperature reaches an unacceptable level, portions of, or the entire, battery system could be shut down. The BICS would also provide an alarm and operator notification for a temperature that rises above the correct set point (SERC 2017b).

Staff conducted its own evaluation of the safety of lithium ion batteries and concluded that lithium ion batteries pose a unique hazard. The principal hazard associated with lithium ion batteries would be fire, which could occur if a battery casing was opened, punctured or crushed. The fire could also be caused if the battery cell is short circuited or overheated. If a fire ensues after such an event, it may burn rapidly with flare-burning effect and may ignite other batteries in close proximity. The fire can produce corrosive and/or toxic gases including hydrogen chloride, hydrogen fluoride, and carbon monoxide, similar to a fire involving a like amount of plastics. Therefore, the first responders may need PPE to suppress the fire safely. Due to the potential for fire and toxic gases from the lithium ion energy storage system (ESS), staff concludes that Stanton's ESS presents a significant risk that must be mitigated.

Staff has reviewed the current regulatory framework regarding fire and life safety as related to lithium ion energy storage systems. The regulatory environment has not yet adapted to the speed at which the new lithium ion energy storage systems are being developed and installed. There are a few standards and best practices that are being developed by the Underwriters Laboratories (UL) and the National Fire Protection Association (NFPA) for energy storage systems. The NFPA 855: Standard for the Installation of Stationary Energy Storage Systems is currently being developed by a technical committee and should be forthcoming in 2018. UL has already published UL 9540:2016:Energy Storage Systems and Equipment whose requirements cover energy storage systems that are intended to receive electric energy and then to store the energy so that the ESS can provide electrical energy to loads or the local/area electric power system and to the electrical utility power grid when needed. 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. In addition, the California Fire Marshall has submitted energy storage system code changes to the 2016 CFC that 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 catch up.

Since the existing building and fire codes do not yet fully encompass the entire design and installation of an ESS, staff has determined that the requirement for the ESS to additionally have a UL 9540 certification, which *would* cover both the integrated ESS design and its included components, would ensure that adequate safety measures are provided. A UL 9540 certification requires that the ESS meet an array of design

requirements, industry standards, and safety codes. The standard also requires that a safety analysis and a fire risk assessment be conducted. This safety analysis would include an assessment of the adequacy of the ESS's control and safety systems. The fire risk assessment would also include an assessment of the adequacy of the fire detection and fire suppression systems. A UL 9540 certification would ensure that both assessments occur, and that any recommended safety and fire protection measures would be included in the final design and installation before the start commissioning of the Stanton ESS.

Staff proposes Condition of Certification **WORKER SAFETY-8,** under which the project owner would be required to meet any current regulatory requirements at the time of construction and to obtain UL 9540 certification for the ESS, and to collaborate with the OCFA in the review of fire safety provisions to be provided for the ESS. The project owner would also be required to provide necessary system information and opportunities for on-site fire training to the OCFA to assist them in updating their standard operating procedures for dealing with a potential lithium ion battery fire at the Stanton facility. If adopted, staff's proposed Condition of Certification **WORKER SAFETY-8** would provide adequate protection to on-site workers and would mitigate the fire risks posed to first responders and the offsite public to a level that is less than significant.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of Emergency Medical Services (EMS) response and offsite 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 a 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 finds 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 it is appropriate for the project owner to maintain an AED 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 supervisory 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 Stanton combined with existing industrial facilities and expected new facilities in the vicinity to result in impacts on the fire and emergency service capabilities of the OCFA 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 the OCFA, 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 OCFA has stated that its ability to respond to emergency calls will not be affected by the construction and operation of Stanton (OCFA 2016a). Therefore, staff agrees with the applicant that mitigation is not required.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Staff concludes that construction and operation of Stanton 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.

RESPONSES TO PSA COMMENTS

Dayzen, LLC (Applicant), (TN#223293), April 30, 2018

Comment: *The applicant is requesting to modify **WORKER SAFETY-8** to allow field certification of the Energy Storage System to UL 9540. (Dayzen, LLC (Applicant), (TN#223293), April 30, 2018).*

Staff Response: Staff concurs and has rewritten **WORKER SAFETY-8** to clarify that a field certification of the Energy Storage System to UL 9540 is acceptable. Several steps have been added to ensure that the field certification starts at the design phase of the Energy Storage System to prevent changes to the system having to occur in the field after completion of construction but prior to commissioning.

Orange County Fire Authority, (TN#223289), April 30, 2018

Comment: *Each gas turbine would require a fire suppression system.*

Staff Response: A carbon dioxide or other gaseous chemical system would be installed at each gas turbine. Please refer to the Project Description.

Comment: *Two fire department access gates would be required (one each from Dale and Pacific Street).*

Staff Response: Staff concurs and has required that the project owner provide and maintain a secondary emergency access per Condition of Certification **WORKER SAFETY- 6.**

Comment: *The lithium ion battery rooms shall be protected by an OCFA approved fire suppression system with an early warning system and heat detection, a remote shutdown for the equipment, and an automatic enclosure fire extinguisher system (e.g. water or inert gas).*

Staff Response: The energy storage system would be required to have UL 9540 certification per Condition of Certification **WORKER SAFETY- 8**. UL 9540 certification requires that the energy storage system include fire protection systems based on a hazards analysis. **WORKER SAFETY- 7** would require that all fire protection drawings for the project be provided to the OCFA for review and comment.

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 **-8**, 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 Orange County Fire Authority for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction and Safety and Health Program. The project owner shall provide to the CPM a copy of a letter from the Orange County Fire Authority stating the fire department's comments on the Construction Fire Prevention Plan and the 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 items:

- an Operation Injury and Illness Prevention Plan;
- an Emergency Action Plan;
- a Hazardous Materials Management Program;
- a Fire Prevention Plan (Cal Code Regs., tit. 8, § 3221);
- a Fire Protection System Impairment Program; and
- a Personal Protective Equipment Program (Cal Code Regs, tit.8, §§ 3401—3411).

The Operation Injury and Illness Prevention Plan, Hazardous Materials Management Program, Emergency Action Plan, Fire Prevention Plan, Fire Protection System Impairment Program, and Personal Protective Equipment Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan, Fire Protection System Impairment Program, and the Emergency Action Plan shall also be submitted to the Orange County Fire Authority for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy to the CPM of a letter from the Orange County Fire Authority 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 worker safety-related 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;
- ensure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

- ensure that all construction and commissioning workers and supervisors receive adequate safety training;
- conduct accident and safety-related incident investigations and provide emergency response reports for injuries, and inform the CPM of safety-related incidents; and
- ensure that all the plans identified in Conditions of Certification **WORKER SAFETY-1** and **-2** are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement CSS shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- a 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 of any visits from Cal/OSHA and/or any complaints from workers to Cal/OSHA; and
- report of accidents, injuries, and near misses 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 from an independent company not affiliated with the DCBO and report directly to the DCBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction, 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 Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees on site 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 proof that a portable automatic external defibrillator (AED) is available to be made available on site as soon as physically possible along with a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall prepare an Emergency Access Plan that shows a secondary emergency access to the Stanton site where the specifications of the roadway will comply with the Stanton Municipal Code and the 2016 (or latest edition) California Fire Code. A secondary access must be maintained to the standards listed above 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 to the Orange County Fire Authority for review and timely comment, and to the CPM for review and approval. If a change to the secondary access is proposed by the project owner, 90 days before it would occur, the project owner must submit the proposed change, with an updated Emergency Access Plan that shows the new proposed location/arrangement for the secondary emergency access road, to the Orange County Fire Authority for review and timely comment, and to CPM for review and approval.

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 Orange County Fire Authority for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection.

WORKER SAFETY-8 The project owner shall ensure that the lithium ion battery energy storage system has UL 9540: UL Standard for Safety for Energy Storage Systems and Equipment certification. The project owner shall submit the certification along with the fire protection drawings and specifications for the ESS to the Orange County Fire Authority for review and comment and to the CPM for review and approval. The project owner shall also collaborate with the Orange County Fire Authority to assist the development of standard operating procedures for first responders to implement when confronting a fire occurring within the lithium ion ESS located on site.

Verification:

(a) At least 60 days prior to the start of construction of the project, the project owner shall provide to the CPM:

(1) A copy of UL 9540 design certification for the ESS, or

(2) A copy of the contract with UL (or authorized UL agent) to perform a field certification during construction of the ESS to obtain UL 9540 certification.

(b) At least 60 days prior to the start of construction of the ESS, the project owner shall:

(3) provide the complete ESS fire protection drawings and specifications to the Orange County Fire Authority for review and comment, and to the CPM for review and approval, and;

(4) submit to the CPM, a copy of a letter from UL stating that the design drawings for the ESS have been reviewed and meet UL 9540 requirements for performing a field certification.

(c) At least 60 days prior to the start of ESS commissioning, the project owner shall provide a copy of a letter from the project owner to the OCFA offering collaboration and assistance in developing standard operating procedures for first responders to any lithium ion battery fires that may occur at the project site.

(d) Prior to the start of commissioning, the project owner shall provide a copy of the final completed UL 9540 certification of the ESS to the CPM.

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Engineering Assessment

FACILITY DESIGN

Testimony of Shahab Khoshmashrab and Edward Brady

SUMMARY OF CONCLUSIONS

The California Energy Commission staff concludes that the design, construction, and eventual closure of the Stanton Energy Reliability Center (Stanton 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 Stanton project. 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)

The list of LORS applicable to various engineering disciplines is described in **Facility Design Table 1** below:

Facility Design Table 1
Engineering Laws, Ordinances, Regulations and Standards (LORS)

Applicable LORS	Description	Project Consistency
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards	Condition of Certification **MECH-2**
State	2016 (or the latest edition in effect) California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)	Conditions of Certification **GEN-1** through **GEN-8**, **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1** through **MECH-3**, and **ELEC-1**
Local	City of Stanton Municipal Code: Title 13, Public Utilities Title 16, Buildings & Construction, Division I, Building and Excavation Title 16, Buildings & Construction, Division II, Grading and Excavation Title 20, Zoning	Conditions of Certification **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1**, and **ELEC-1**
General	American Concrete Institute (ACI) Codes American Institute of Steel Construction (AISC) Codes American National Standards Institute (ANSI) Codes American Society of Testing and Materials (ASTM) Codes Concrete Reinforcing Steel Institute (CRSI) Codes American Concrete Institute (ACI) Codes American Institute of Steel Construction (AISC) Codes American Society of Civil Engineers (ASCE) Codes American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code American Welding Society (AWS) Occupational Safety and Health Administration (OSHA) National Electric Safety Code (NESC) National Fire Protection Association (NFPA Standards) Steel Deck Institute (SDI) – Design Manual for Floor Decks and Roof Decks ASME/ANSI B31.1 Power Piping Code ASME Performance Test Codes Air Moving and Conditioning Association (AMCA) American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Cooling Tower Institute (CTI) Heat Exchange Institute (HEI) American Society for Testing and Materials (ASTM) California Electrical Code Underwriters Laboratories, Inc. (UL)	Conditions of Certification **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1** through **MECH-3**, and **ELEC-1**

These LORS are applicable to the Stanton project. The **Facility Design** conditions of certification located at the end of this technical section require the project to comply with these LORS to ensure that it would be built to applicable engineering codes and ensure public health and safety.

SETTING

The project is located in the city of Stanton in an area that is zoned Industrial General (City of Stanton IG zoning district). 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.

The Stanton project 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 (SERC 2016a, §§ 2.2.1, 2.2.2, 2.3; SERC 2016b, 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, the project 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 may 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 enter into an agreement 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.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received no comments in the area of **Facility Design**.

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 the Stanton project 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) for design review, plan checks, construction inspections, and other applicable CBO activities, based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. If the Energy Commission delegates the CBO function to a third party or local agency, the project owner, at the Energy Commission's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated between the Energy Commission and the DCBO. 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 third party or local agency, the project owner, at the Energy Commission's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated 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, of 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 monthly compliance report following receipt of such approvals. 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); and
- Title 24, California Code of Regulations, Part 2 (California Building Code).

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 13.1 kV, 4.16 kV and 480 V systems;
2. system grounding drawings;
3. lightning protection system; and
4. hazard area classification plan.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.1 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:

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

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

SERC 2016b – Stanton Energy Reliability Center, LLC (TN 214207-1 to 37). Application for Certification Vol.2, dated October 26, 2016. Submitted to CEC/Docket Unit on October 27, 2016.

GEOLOGY AND PALEONTOLOGY

Testimony of Garry Maurath, Ph.D, PG, CHG

SUMMARY OF CONCLUSIONS

The proposed Stanton Energy Reliability Center, LLC (Stanton) site is located in an industrial area within the City of Stanton, Orange County, California, at 10711 Dale Avenue. The site is located on a gently sloping coastal plain that drains southwesterly toward the Pacific Ocean and the site proper, including the proposed 2.75 mile-long gas supply pipeline, would be constructed on flat terrain. The proposed 0.35-mile-long generator tie-line would be underground, along a path that runs from the Stanton site east to the Southern California Edison Barre Substation.

The Stanton site area can be characterized as an active seismic area. 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. Preliminary geotechnical studies recommend significant foundation improvement be undertaken to mitigate potential impacts to structures from the effects of seismic shaking. 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** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1.** This investigation would present standard engineering design requirements for mitigation of strong seismic shaking, liquefaction, and potential excessive settlement due to dynamic compaction.

No economically viable geologic or mineral resources were identified at the Stanton site.

Fossils have been found within several miles of the project site, where uplift and erosion have exposed older geologic units, particularly the early to middle Pleistocene Palos Verdes Sand. At the site, the surface and near surface material consists of disturbed fill and Quaternary alluvium, both of which have low paleontological potential. However, the actual conditions at depth are unknown and, if paleontological resources were discovered during construction activities, 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 Stanton 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 Stanton facility as well as Stanton'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 Stanton's construction, operation, and demolition. Applicable LORS are also listed in the Application for Certification (AFC) (SERC, 2016a). 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 resources at Stanton.

Geology and Paleontology Table 1
Proposed Project Consistency with Applicable Geology and Paleontology LORS

Applicable LORS	Description	Basis for Consistency
State		
California Building Code (2016) as amended by the city of Stanton	The California Building Code (CBC, 2016) 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 and has been amended by the city of Stanton.	**GEO-1** requires the project 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; and corrosive soils. 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 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, 2016b)	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 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 LORS	Description	Basis for Consistency
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 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		
City of Stanton General Plan 2013	The city of Stanton 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 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; and corrosive soils. 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.
County of Orange General Plan 2005 as amended in 2012, including 2015 Land Use Element	The Orange County General Plan is a blueprint for growth and development of Orange County. Chapter IV of the plan requires assessment and mitigation of affected natural resources.	There are no geologic resources at the site therefore there would be no significant impacts from project construction and operation. **PAL-1** through **PAL-8** were developed based upon the guidance provided by the Society for Vertebrate Paleontology (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.

Applicable LORS	Description	Basis for Consistency
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.
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 Stanton. 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

The Stanton site consists of two vacant parcels encompassing about four acres located in an industrial area within the City of Stanton, Orange County, California, at 10711 Dale Avenue, south of Standustrial Street and north of a railroad right-of-way **(Geology and Paleontology - Figure 1)**. Stanton and the proposed gas and water supply pipelines would traverse flat terrain. The proposed generator tie-line would be along a 0.35-mile-long, 66-kilovolt underground generator tie-line to Southern California Edison Barre Substation adjacent to the site. The site is located on a gently sloping coastal plain that drains southwesterly toward the Pacific Ocean.

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 which was broken off of 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 constitute the northern boundary of the Peninsular Ranges. The Transverse Ranges 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.

Stanton would be located within the Peninsular Ranges geomorphic province of southern California, which is one of the largest geologic units in western North America, extending from the Transverse Ranges in the north to the tip of the Baja. The Peninsular Ranges are a northwest-southeast oriented complex of blocks, separated by similarly trending faults (Norris and Webb, 1990). Stanton is in the southeastern portion of the Central Plain of the Los Angeles Basin between the Newport-Inglewood and Whittier fault zones **(Geology and Paleontology - Figure 2)**. The Los Angeles Basin is one of several tectonically distinct depositional basins along the western margin of Southern

California (Harden, 1998). The Los Angeles Basin is a relatively flat, low-lying coastal plain surrounded by mountains on the north east and south. The western margin of the basin is open to the sea, except at the Palos Verdes hills. The project site is located on the Anaheim 7.5-minute Quadrangle. The main body of this quadrangle is underlain by the broad, northwest-plunging synclinal Los Angeles Basin.

The Los Angeles Basin is comprised primarily of 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 surface and near surface sediments of the Los Angeles Basin are quite young, dating from the Pliocene to Recent (the last 5 million years) (Yeats and Rockwell, 1991). Major rivers and drainages throughout the basin have been modified by agricultural, urban and commercial development and are now largely confined within lined channels.

Regional geological maps of Orange County (Morton and Miller, 2006) indicate the surface of the site is occupied by Holocene-age alluvium. Regional geological studies indicate that Holocene-age flood-plain sediments extend up to a depth of about 75 feet. These are primarily silts, sands, and gravels deposited by the rivers meandering across the floor of the Los Angeles Basin when they flowed under their natural regime. These units are underlain by non-indurated to poorly indurated, marine and non-marine, Pleistocene-age sediments of the Lakewood and San Pedro formations. These Pleistocene units extend to depths on the order of several hundred feet (~500 to 1,000 feet). The depth to the top of Tertiary-age sedimentary rock is more than 1000 feet deep, and crystalline basement rock is about 24,000 feet deep in the site region. Gently folded Quaternary sedimentary rocks mark the structure of the Anaheim Quadrangle. The closest bedrock outcrops are the Coyote Hills, about 2 miles to the north, although the “bedrock” consists of relatively unconsolidated marine sediments, also of Quaternary age (Morton, 2004). The closest surface exposure of non-Quaternary age rocks is 9.5 miles east of the site where the Santa Ana River exits the Coyote Hills and Santa Ana mountains, east of Anaheim, California (CGS, 2007).

The geological history of this region is complex, owing to intense tectonic deformation associated with the San Andreas Fault, the rotation of the Transverse Ranges, and the uplift or subsidence of individual depositional basins, and smaller portions of basins along the coast. This tectonic activity and deformation continues to present (Yeats and Rockwell, 1991). The Los Angeles Basin began as a deep-sea depositional basin during the middle Tertiary, as early as 35 million years ago, and its oldest sediments consist of relatively deep-sea marine turbidities and mudstones unconformably overlying older beds (Yeats and Rockwell, 1991). During the last glacial age, when sea level was hundreds of feet lower than it is now, the coastal plain extended far out to sea (Lajoie and others, 1991), and areas nearer the hills experienced increased sedimentation as easily eroded hills shed their sediment load onto the plain.

Project Site Description And Access

Stanton would be located in the City of Stanton, Orange County, at 10711 Dale Avenue **(Geology and Paleontology - Figure 1)**. The site is located in an area that is zoned Industrial General (City of Stanton IG zoning district). Land uses surrounding the site include the City of Stanton's industrial area to the north and south, public/quasi-public utility areas to the east consisting of the Southern California Edison Barre Peaker power plant and Barre Substation, and high- and medium-density residential uses to the southeast and northwest.

The site consists of two parcels: (1) Parcel 1 (eastern side of the drainage canal) is 1.764 acres in size (Assessor's Parcel Number [APN] 126-531-43), and (2) Parcel 2 (western side of the canal) is 2.214 acres in size (APNs 126-531-40 and 126-553-18), for a total project site acreage of 3.978 acres. The south flowing, concrete lined Stanton Storm Channel exists on the eastern extent of Parcel 2 and effectively separates the two parcels. The bottom of the channel is at elevation 62.8 feet above mean sea level. The planned final grade of the site would vary from 71.8 feet above mean sea level in the east to 69.2 feet above mean sea level in the west.

LOCAL GEOLOGIC SETTING

The Stanton site lies within a predominantly northwest-southeast trending Central Plain of the Los Angeles Basin. The surficial geology in the immediate vicinity of the proposed Stanton facility is composed entirely of Quaternary age alluvial deposits **(Geology and Paleontology – Figure 3).** Stanton is about 6.5 miles west of the course of the Santa Ana River and 2 miles south of a fault zone running along the base of the Coyote Hills. The owner reported that a layer of disturbed sediment and fill covers the entire area proposed for the generation station. Based on the information provided in geotechnical boring logs B-1 through B-6 presented in Appendix A of the preliminary geotechnical report (NV5 West 2016) the thickness of this layer is about 1-foot **(Geology and Paleontology – Figure 4).** Based on historical aerial photography agricultural activity has occurred across the eastern portion of the site, and the western portion of the site has been disturbed by current industrial activities. Below this fill, late Holocene age alluvial fan deposits have been mapped (Morton, 2004). These sediments are the product of subaerial debris flows issuing from the Coyote Hills to the north, often as a result of catastrophic events following hill-slope denudation and heavy winter rains. This alluvium is only marginally distinguishable from younger axial channel deposits that have been mapped in the area, although not within the project's area of potential effect to paleontological resources (Morton, 2004). Other geological units lie well over one mile from the project area and the gas line linear. The information provided in geotechnical boring logs (NV5 West 2016) is not sufficiently detailed to differentiate younger from older alluvium at the Stanton site.

During a recent preliminary geotechnical investigation conducted on the site (NV5 West 2016), Quaternary-aged alluvium was encountered to the total explored depth of 51.5 feet below the ground surface in each of six geotechnical borings **(Geology and Paleontology – Figure 4).** The alluvium generally consisted of light brown to dark gray, moist, micaceous, silty to clayey sand and soft to firm sandy to clayey silts (NV5 West, 2016). Standard Penetration Test blow counts were typically less than 10 between depths of 0 and 30 feet below ground surface (bgs), typically less than 20 between depths of 30 and 40 feet bgs, and typically less than 10 between 40 and 50 feet bgs (NV5 West, 2016). This indicated that the material underlying the entire project site is loose to moderately dense sand.

Groundwater was encountered in all six of the geotechnical borings at a depth of approximately 20 feet bgs. Groundwater levels may vary due to seasonal fluctuations and factors such as a substantial increase in surface water infiltration from landscape irrigation, agricultural activity, storage facility leaks or unusually heavy precipitation (NV5 West, 2016).

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 that 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 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 would 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.

A baseline paleontological resources inventory of the Stanton site area and surrounding lands, published and available unpublished geological and paleontological literature was reviewed. Sources included geological maps, satellite photography, technical and scientific reports, and electronic databases. The potential paleontological productivity of stratigraphic units that may be affected by project implementation was then initially developed through a paleontological resources records search. For this project, a paleontological resources records review was conducted using the online database maintained by the University of California Museum Of Paleontology at Berkeley (UCMP).

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, 2016) 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

The California Division of Mines and Geology published a comprehensive mineral land classification map for the Greater Los Angeles Area and Orange County. Based on this investigation, the Stanton area is mapped as Mineral Resource Zone 4. Mineral Resource Zone 4 is defined as areas where the "available information is inadequate for assignment to any other MRZ category" (Miller and Corbaley, 1981). When this study was conducted the Stanton area was highly developed, and has no mineral resource development. Historical aerial photography (1953 through 2012) and topographic maps (1896 through 1981) indicate that no viable mineral resources had been identified or developed in the area (AEC 2016).

At the proposed Stanton site, the geologic units at the surface and in the subsurface are widespread alluvial deposits that occur throughout the Los Angeles Basin area. These units are not unique in terms of commercial value. Although the potential is very low, recreational or scientific (e.g. rare mineral or fossil) deposits may exist given the geologic environment in the area. There are no known commercial petroleum deposits and aggregate deposits present at the Stanton site or in the immediate surrounding area. Construction of Stanton on a relatively small site encompassing four acres 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, or the loss of availability of a locally important mineral resource recovery site delineated on a local plan, specific plan, or other land use plan.

Based on the information above, it is staff's opinion that the project would have no effect on geologic or mineralogic 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

Queries of the UCMP database yielded 36 vertebrate fossil records, but from only four sites (UCMP, 2016). These sites are all in the hills more than 2 miles to the north and east, or are from near the ocean shore more than 10 miles to the south. In these areas, uplift and erosion have produced geological outcrops of older sediments, particularly exposures of the fossiliferous early- to middle-Pleistocene Palos Verdes Sand formation. There are no natural geological outcrops anywhere in the project area. There are more than 4,000 other records of microfossil and invertebrate collections. While microfossils are not considered individually significant because of their abundance in the geologic record, their records provide good information on the location of potentially fossiliferous sediments.

The records search (UCMP, 2016) produced no records indicating that the alluvial sediments upon which Stanton and the proposed natural gas pipeline are sited, possess paleontological sensitivity. The low paleontological sensitivity indicated by the records search is consistent with the young age of sediments and its manner of deposition.

Alluvial fan lobes extending out of the hills and mountains surrounding the greater Los Angeles Basin were deposited subaerially, in a context that would promote the rapid decomposition of any organic remains. Throughout the American southwest, including the arid Southern California coast, alluvial fans generally do not yield fossils absent special conditions. This is not necessarily the case for localities closer to major streams. Prior experience (Verhoff and Spaulding, 2011) has shown that overbank deposits and sediments laid down by relict fluvial channels tend to occur at depth within about 1 mile of major streams such as the Santa Ana River, and can yield late Pleistocene fossil remains. However, this project site is not located on or near such a geomorphic setting.

The area surrounding the Stanton site is entirely developed, being covered with the concrete and asphalt composing the buildings and roads of metropolitan Orange County. Because the project area is on a coastal plain, which is a region consisting of younger Quaternary (Holocene) sediments that is devoid of outcrops, no fossils or fossiliferous sediments are expected to be encountered at or near the surface. Where bare ground is visible, its origin (native or fill) is uncertain. Based on a review of historical aerial photography performed for a Phase I Environmental Site Assessment, the currently undeveloped eastern portion of the site has been previously disturbed with grading and agricultural activities (AEC, 2016). Therefore, no paleontological resources survey was conducted by the applicant.

A review of records from the greater Los Angeles Basin reveals that three circumstances have the potential to yield fossiliferous sediments at depth, including below a capping stratum of younger alluvium. The potential for fluvial deposits in the project area has been discussed and dismissed, which leaves two possibilities: either shallow outcrops of older marine sediment or buried geologic or topographic irregularities, the most famous of which in this area are the artesian pools and tar pits of Rancho La Brea. A remote possibility exists that such geological contexts may be found at depth in the project area. Nevertheless, the lack of records and context are evidence chiefly pointing to low paleontological sensitivity of sediments at depth in this project area. Sediment near the surface, within the top three feet, possesses no paleontological sensitivity (SERC 2016a).

The younger Quaternary alluvium of the alluvial fans extending into the valley from the hills to the north possesses no paleontological sensitivity; it is too young, the subaerial deposition regime of alluvium usually precludes fossil preservation, and no records have been found of fossil sites in similar settings. The older Quaternary alluvium that would be encountered at depth possesses unknown paleontological sensitivity in the absence of special geological circumstances. These special circumstances include the nearby presence of a river or major stream, unusual paleo-topographic or geological circumstances at depth, or shallow outcrops of older sedimentary formations. There is no basis to suspect that any of these circumstances apply to the area in the vicinity of the project. No paleontological resources were identified in any of the 24 bag samples or 63 core samples obtained from the six geotechnical borings that extended 51.5 feet below the ground surface (NV5 West, 2016).

Construction-related excavations at the project site, including the proposed natural gas pipeline to depths of less than three feet would affect sediments of no paleontological sensitivity and would result in no adverse impacts on paleontological resources. Excavations for foundations and other components of the power generation facility itself would extend deeper than three feet, and may encounter older alluvial deposits.

At any time potential fossils are recognized by either the paleontological monitor or the worker earthwork would be halted in the immediate area of the find. A paleontologic resource specialist (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.

Although there is a low potential for significant fossils to be encountered in excavations in older alluvium at the site, 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 (PRS) and recovery of any important paleontologic resources.

In accordance with **PAL-3**, the applicant would prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) for approval by staff. The PRMMP would function as the formal guide for identifying where monitoring would occur based on sensitivity. The PRMMP would also define the reporting protocol should paleontological resources be discovered, and identify who is responsible for making the preliminary, and final determination of significance of such resources.

Low sensitivity areas, such as areas where the younger alluvium is encountered, likely also underlie the shallow portions of the site and would not require monitoring. However, where there are deep excavations such as for foundations or utilities, older alluvium may be encountered and monitoring would be required. The PRMMP would also identify collecting and sampling methods where monitoring is conducted. Earthwork would be halted in the immediate area of a find any time potential fossils are recognized by either the paleontological monitor or the worker. When properly implemented, the conditions of certification would yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated.

A paleontological resource specialist would be retained for Stanton by the applicant to produce the 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 Stanton site (SERC, 2016a). 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, could be significant. Preliminary geotechnical studies recommend significant foundation improvement be undertaken to mitigate potential impacts to structures from the effects of seismic shaking. 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 further addressed in a project design per requirements of CBC, 2016, or the most current version succeeding that code.

Staff's independent research included the review of available geologic maps, reports, and related data of the proposed Stanton 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

The tectonic setting of Southern California is complex and is made up of numerous fault systems, including strike-slip, oblique, thrust, and blind thrust faults. The, tectonic deformation between the Pacific and North American plates is accommodated primarily by a zone of northwest trending 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). CGS has an ongoing program to update earthquake fault zoning decisions. The most recent revised maps were released June 15, 2017. 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 2**.

Because of this active tectonic setting any specific area of the region 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.

Review of geologic maps and literature pertaining to the general site area indicates that the site is not located within a state-designated Earthquake Fault Zone. In addition, there are no known major or active faults mapped on the project site. Evidence for active faulting at the site was not observed during the geotechnical investigation (NV5 West, 2016).

The Stanton 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. There are four active or potentially active faults in the vicinity of Stanton with a potential to affect the site. They are the Newport-Inglewood, Elsinore, Compton-Los Alamitos, and Whittier faults. These faults, summarized in **Geology and Paleontology Table 2**, are described below and shown on **Geology and Paleontology – Figure 2.**

Geology and Paleontology Table 2
Active or Potentially Active Faults Near the Project Site

	Newport-Inglewood	Elsinore	Whittier	Compton-Los Alamitos
Distance from site (miles)	7	19	12.5	4.2
Fault Length (miles) (SCEDC 2017)	47	110	25	7
Type (SCEDC 2017)	right-lateral reverse-slip	right-lateral strike- and oblique-slip	right-lateral strike- and reverse-slip	reverse fault (blind thrust)
Stress regime	transpressional	transpressional	transpressional	compressional
Fault extensions	offshore extension - Rose Canyon fault	(north) splits into the Chino and Whittier faults (south) Laguna Salada Fault	Elsinore fault to the south	unknown
Slip Rate (in/year)	0.02 (Hauksson 1987)	(north) 0.16 (SCEDC 2017) (south) >0.25 (Fletcher and others 2011)	0.12 (SCEDC 2017	no surface exposure
Probable Max. Moment Mag. EQ (SCEDC 2017)	7.5 (Petersen 2008)	7.5	7.2	7.4 (Leon 2009)
Recent events (magnitude/year)	M4.9/1920; M6.3/1933; (Gupthill and Heath 1981)	M6/1910 (SCEDC 2017)	Holocene (Gath 1988)	Late Quaternary (CGS 2010)

Newport-Inglewood Fault Zone

The Newport-Inglewood fault zone (NIFZ) is approximately 1.5-2.5 km wide and trends N45-60W. It is mainly a right-lateral tectonic structure that extends from the Santa Monica Mountains on the north to an offshore connection with the Rose Canyon fault at San Diego on the south (Shlemon, 2008). Known active fault traces in the NIFZ zone of deformation have been mapped in Alquist-Priolo Special Studies Zones (CDMG, 1997).

The NIFZ was first identified as a significant threat to southern California residents in 1933 when it generated the M6.3 Long Beach earthquake, killing 115 people and providing motivation for passage of the first seismic safety legislation in the United States (Grant, 2004). Ongoing studies indicate the NIFZ is capable of generating earthquakes with magnitudes up to 7.4 Mw (Toppozada, 1989) or 7.5Mw (Petersen, 2008). The higher magnitude indicated by Petersen uses a fault length of 208 km as described by Shlemon (2008).

It has been proposed that the NIFZ is isolated at depth by a decollement (Grant and Shearer 2004). However, recent investigations of Helium-3 gas along 30 miles of the fault trace are believed to be linked to a deep-seated source connected to the mantle, suggesting that a decollement is not isolating the NIFZ (Boles and others 2015).

Elsinore Fault

The Elsinore fault zone parallels the San Jacinto fault and is part of the same right-lateral crustal plate strain system as the San Andreas and the San Jacinto faults (ECI, 2000). In the north the Elsinore fault branches into the Whittier fault near Santa Ana Canyon, where it borders the Puente Hills to the southwest and the Chino fault to the northeast. The most apparent displacements on the Whittier-Elsinore fault have been vertical, as evidenced by the steep scarp (an earthquake-built cliff) along the Santa Ana Mountains. Towards the south, the Elsinore fault joins the Laguna fault.

The slip rate along the southern portion of the Elsinore fault is about 0.25 inches per year (Fletcher and others 2011), while the slip rate along the northern portion of the fault is about 0.16 inches per year (SCEDC 2017). This could indicate that strain is building faster along the southern portion of the fault, whereas the bifurcation of the Elsinore fault into the Whittier and Chino faults allows for distribution of the stress field over a greater area.

Whittier Fault

The Whittier fault is exposed for a distance of about 25 miles along the south slopes of the Puente Hills from the Whittier Narrows on the northwest to the Santa Ana River near its southwest end (Yerkes, 1965). At its closest point the Whittier Fault is approximately 12.5 miles northeast of Stanton. In the vicinity of the Santa Ana River, it joins with the northern end of the Elsinore Fault Zone. Recent deformation along the Whittier Fault Zone is indicated by steeply tilted and locally overturned strata of late Pleistocene age (Yerkes, 1965). Trenching along the fault has uncovered evidence of recent offsets, including faulted Holocene alluvium dated at 1400 to 2200 years before present (Gath, 1988).

Compton-Los Alamitos Fault

The Compton blind thrust fault, which is the most recently identified fault in the vicinity of the project, has generated at least six large-magnitude earthquakes (M_w 7.0–7.4) during the past 14,000 years (Leon, 2009). Deformed Holocene strata record recent activity on the Compton thrust and are marked by discrete sequences that thicken repeatedly across a series of buried fold scarps. Minimum uplift in each of the scarp-forming events, which occurred at 0.7–1.75 thousand years ago (ka) (event 1), 0.7–3.4 ka or 1.9–3.4 ka (event 2), 5.6–7.2 ka (event 3), 5.4–8.4 ka (event 4), 10.3–12.5 ka (event 5), and 10.3–13.7 ka (event 6), ranged from ~0.6 to ~1.9 m, indicating minimum thrust displacements of 21.3 to 4.2 m. Such large displacements are consistent with the occurrence of large-magnitude earthquakes (M_w 2 7).

This large, concealed fault underlies the Los Angeles metropolitan area and thus poses one of the largest deterministic seismic risks in the United States (Leon, 2009).

It has been hypothesized that in 1933 the Compton-Los Alamitos fault may have ruptured in conjunction with the M6.3 NEFZ event (Yeats and Verdugo 2010). The lack of surface exposure and depth of the fault make detailed investigation problematic and links between the NIFZ and the Compton-Los Alamitos fault are speculative.

Seismic Shaking

A significant geological hazard at Stanton is strong ground-shaking due to an earthquake. The proposed Stanton site area has experienced seismic activity with strong ground motion during past earthquakes, and it is likely that strong ground motions would occur at the site in the future. A Design Spectral Acceleration (parameter SD1) of 0.54g is considered for the design of the project (NV5 West, 2016). An updated seismic evaluation would be conducted during the project's future design-level geotechnical investigation, in accordance with current California Building Code (CBC) standards, and would be conducted post-certification pursuant to standard California Energy Commission (CEC) Conditions of Certification.

Preliminary seismic design parameters for the project site were developed as per the guidelines outlined in the 2012 IBC (2008 USGS hazard data) and 2010 ASCE 7-10 Standard (with errata as of April 2013). The USGS Earthquake Hazards application called the U.S. Seismic "DesignMaps" Web Application was used to derive the preliminary seismic design parameters for the project site, which are presented in **Geology and Paleontology Table 3**. This application produces seismic hazard curves, uniform hazard response spectra, and seismic design values. The values provided by this application are based upon data from the 2008 USGS National Seismic Hazard Mapping Project (NV5 West, 2016). 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 3
Planning Level 2012 IBC Seismic Design Parameters Maximum Considered Earthquake, ASCE 7.10 Standard

Parameter	Value
Assumed Site Class	D
Structure Risk Category	III - Substantial
SS – Mapped Spectral Acceleration, Short (0.2 Second) Period	1.4922 g
S1 – Mapped Spectral Acceleration, Long (1.0 Second) Period	0.543 g
Fa – Site Coefficient, Short (0.2 Second) Period	1.0
Fv – Site Coefficient, Long (1.0 Second) Period	1.5
Maximum considered earthquake spectral response acceleration for short periods, SMS adjusted for Site Class	1.492 g
Maximum considered earthquake spectral response acceleration for short periods, SM1 adjusted for Site Class	0.814 g
S_{DS} – Five-percent damped design spectral response acceleration at 1-sec period periods,	0.995 g
S_{D1} - Five-percent damped design spectral response acceleration at 1-sec period.	0.543 g

ASCE = American Society of Civil Engineers
Values from USGS Seismic Design Maps (USGS, 2010)

These parameters are project-specific and based on Stanton's location, calculated using latitude and longitude inputs of 33.807039 degrees north and 117.985365 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 Stanton 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 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**. Compliance with these conditions of certification would ensure the project is built to current seismic standards and potential impacts 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 Anaheim Quadrangle (CDMG, 1998). 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" (CDMG, 1998).

Soil conditions at the Stanton site predominantly consist of Quaternary age alluvial deposits. Borings advanced to 51.5 feet bgs identified subsurface material consisting of poorly to moderately consolidated alluvial silt with varying contents of clay. Depth to water beneath the site is approximately 20 feet bgs (NV5 West, 2016). The findings of the 2016 study concluded that some of the soil layers underlying the site are susceptible to liquefaction.

A previous geotechnical investigation conducted at the site in 2011 also determined that the site is susceptible to liquefaction based on the assumed groundwater surface. The potential for liquefaction to occur at the site is moderate based on the depth and thickness of the liquefiable soil (SERC, 2016a). Factors of safety against liquefaction within the liquefiable zones ranged up to 1.0. Given the depth below the ground surface and the thickness of liquefiable soil, the potential for surface expression of liquefaction (i.e., sand boils and so on) is considered low (Kling, 2011).

Liquefaction analyses were performed by the applicant using field and laboratory test data with the Civiltech software program LiquefyPro – Version 5.8. The Seed method was used, which consists of comparing a Cyclic Stress Ratio (CSR, earthquake “load”) to the Cyclic Resistance Ratio (CRR, soil “strength”) of the soil. A peak ground acceleration (PGA) value of 0.5g and an earthquake moment magnitude of Mw=6.9, as estimated for the Newport-Inglewood fault were used in the analyses. The analysis indicated that the liquefaction-induced settlements of up to 6 inches would occur within the loose to medium dense sand layers beneath the footprint of proposed structures for the design-event earthquake. In addition, differential settlements could be expected.

The applicant has completed preliminary geotechnical studies to evaluate potential impacts from these phenomena. In response to staff inquires (SERC 2018m) the applicant provided detailed information about the construction methods that would be used to improve foundations conditions for support of project structures. Soils in structure foundation areas would be removed to a horizontal plane at a minimum depth of 3 feet below the bottom of the deepest foundation or 5 feet below existing grade, whichever is deeper, generally extending 5 feet laterally beyond the perimeter of foundations. The exposed soil surface would be scarified to a depth of 12 inches, moisture conditioned, and compacted to a minimum of 90 percent relative compaction (per ASTM D 1557) prior to placing any fill. A minimum of two layers of 12-inch-thick geogrid–wrapped crushed aggregate base (CAB), compacted to at least 95 percent relative compaction (per ASTM D 1557) would be placed at the bottom of the over-excavated area. The CAB will conform to the Standard Specification of Public Works Construction (SSPWC) Section 200-2.2 for CAB. The reinforcing geogrids will be Tensar TriAx T160 or equivalent, overlapped a minimum of 3 feet for the bottom layer and 1 foot for the two upper layers.

The applicant’s detailed analysis and preliminary geotechnical design at this early point in project development indicate appropriate measures are being considered for mitigation of potential impacts to structures. These methods of foundation improvement would be consistent with the requirements of CBC 2016, or the most current version succeeding that code. Compliance with proposed Condition of Certification **GEO-1**, and **Facility Design** Conditions of Certification **GEN-1**, **GEN-5,** and **CIVIL-1** would ensure the appropriate final design is implemented.

Ground Rupture and Lateral Spreading

Ground rupture is caused when an earthquake event along a fault creates rupture at the surface. The known active and potentially active faults near Stanton are shown on **Geology and Paleontology Figure 2**. The project site is not transected by known active or potentially active faults (CGS, 2010). The site is not located within an Alquist-Priolo Earthquake Fault Zone (AP EFZ) (CGS, 2007). The nearest mapped exposed EFZ is the Newport-Inglewood Fault located approximately 7 miles to the southwest of the site, (CGS, 2007). Therefore, the likelihood of a ground rupture to occur due to movement along an active fault at the Stanton site is considered low.

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.

The only free-face associated with the Stanton site is the concrete-lined storm channel that bisects the site. While damage to the channel resulting from the liquefaction would most likely be in the form of differential settlement, the possibility of fracturing or lateral spreading between the concrete lining and existing grade does exist.

Analysis of field and laboratory data indicates there is a potential for seismically-induced liquefaction at Stanton. Hence, there is a potential, although it is low, for lateral spreading that 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**.

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. The Stanton area is not noted to be within an area of known subsidence. Although there are a small number of older petroleum wells, but they are no longer active and have been plugged. According to online maps of the California Division of Oil, Gas, and Geothermal Resources (DOGGR, 2016), there are no active wells within two miles of the Stanton site. Thus, there is a very low probability that construction of Stanton would have any impact on the occurrence or progression of subsidence at the site.

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 the preliminary geotechnical investigation and, the extensive development of the surrounding area over the past 50+ years 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. Soils with a high percentage of fines, such as clays and clayey-silts, have a greater compressibility potential. Clean sands typically have limited compressibility (Craig, 1992). 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 geotechnical field data and laboratory analysis of soil samples from the Stanton site near-surface materials are considered compressible. Additional exploration and laboratory analyses would be required to determine the degree of compressibility exhibited by these soils. When compressible soils are encountered in excavations over-excavation and recompaction of these materials is recommended for the proposed structure and fill loads (NV5 West, 2016). 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 Stanton area is not noted to be in an area of expansive soil. Materials encountered during the 2016 geotechnical investigation borings did not note the presence of clay rich soils above the static groundwater level (NV5 West, 2016). Based on the analytical results of laboratory testing the near-surface soils at the Stanton site have a low expansion potential. 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.

Laboratory testing was performed on a representative sample of the on-site soils to evaluate the pH, minimum resistivity, chloride, and soluble sulfate content. The soil had a pH of 8.0, resistivity of 1,000 ohm.cm, chloride content of 43 ppm, and a soluble sulfate content of 120 ppm. Based on these analytical results and various publications including the Caltrans Corrosion Guidelines dated November 2012, the site would be considered “not corrosive” due to the chloride and sulfate concentrations (NV5 West, 2016). 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.

There are no high or steep slopes on or near the Stanton site and no significant grading or excavation for permanent cut or fill slopes is planned. Therefore, the potential for direct impact from mass wasting at the site is considered low to negligible.

However, the potential for and mitigation of the effects of 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 Stanton would be located roughly 70 feet above mean sea level and more than eight miles from the Pacific Ocean, there is no potential for a tsunami event that would affect the site.

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 Stanton.

Effects of Sea Level Rise

Stanton would be located more than eight 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 Stanton 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 Stanton project (PRC § 21083; CCR, Title 14, § 15064[h], 15065[c], 15130, and 15355).

Stanton 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, Stanton would not result in a cumulatively considerable impact.

No surface or near surface geologic and mineralogic resources have been identified in the project area. Development of this project is not expected to lead to a significantly cumulative effect on geologic and mineralogic resources within the project area.

There is a low potential for significant fossils to be encountered in excavations at the site. However, 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 Stanton 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 2016, or the most current version succeeding that code. The potential for lateral spreading and liquefaction must be addressed and mitigated through appropriate facility design. 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 2016, 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 Stanton or along its proposed natural gas pipeline. 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 Stanton.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

No comments were received on the Geology and Paleontology section of the document.

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 Stanton 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 is required for the project by CBC 2016, or the most current version succeeding that code, and proposed Condition of Certification **GEO-1**. 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.

Quaternary age alluvial fan deposits extend to a depth of at least 51 feet below the surface. While there is no anticipation that significant paleontological resources would 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 Stanton 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, although low, there is some potential of encountering paleontologic resources.

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 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) is 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 project owner shall provide to the CPM a copy of the Soils Engineering Report, application for grading permit and any comments by the CBO at least 60 days prior to grading.

PAL-1 The project owner shall provide the CPM with the resume, qualifications, and contact information of its paleontological resource specialist (PRS) 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 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 relevant experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and a minimum of four years' relevant experience monitoring in California; or
- Enrollment in upper division classes pursuing a Bachelor's or more advanced degree in the field of geology or paleontology and a minimum of three years relevant monitoring experience in California.

If the approved PRS is replaced prior to completion of project mitigation and submittal of the paleontological resources report (PRR), the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resources monitors (PRMs). The PRM's resume shall include the names and contact information of references. If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM for review and approval.

Verification:

1. At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work to the CPM, whose approval must be obtained prior to initiation of ground disturbing activities.

2. At least 30 days prior to ground disturbance, the PRS or project 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 owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and the plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings 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 owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent 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 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 owner shall submit a letter to the CPM within five days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and submits the PRMMP to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, 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 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.

11. A copy of the daily monitoring log form.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance the project owner and the PRS shall prepare a CPM-approved Worker Environmental Awareness Program (WEAP).

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources. The purpose of the WEAP is to train project workers to recognize paleontologic resources and identify procedures they 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 owner shall submit the training script and, if the project owner is planning to use a video for training, a copy of the training video, with the set of reporting procedures for workers to follow that will be used to present the WEAP and qualify workers to conduct ground disturbing activities that could impact paleontologic resources.

Verification:

1. At least 30 days prior to ground disturbance, the project owner shall submit to the CPM for review and comment the draft WEAP, including the brochure and sticker. The submittal shall also include a draft training script and the set of reporting procedures for workers to follow.

2. At least 15 days prior to ground disturbance, the project owner shall submit to the CPM for approval the final WEAP and training script. If the project owner is planning to use a video for training, a copy of the training video shall 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 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 owner requests an alternate paleontological WEAP trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct WEAP training prior to CPM authorization.

PAL-6 The project owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading 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 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 owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities; copies of these logs shall be submitted with the monthly compliance report. The name and contact information of PRM(s) and PRS who were making field observations will be included in the daily log. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event. In the event construction has been stopped because of a paleontological find, such notification will be effected as soon as practical, but not later than 24-hours after a stop work order has been issued.

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 owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities to be included in each MCR. The summary shall 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 shall 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 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 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 a California licensed Professional Geologist.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

PAL-8 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed, including collection of fossil material, preparation of fossil material for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological resource materials encountered and collected during project construction. The project owner shall pay all curation fees charged by the museum for fossil material collected and curated as a result of paleontological mitigation. The project owner shall also provide the curator with documentation showing the project owner irrevocably and unconditionally donates, gives, and assigns

permanent, absolute, and unconditional ownership of the fossil material.

Verification: Within 60 days after the submittal of the PRR, the project owner shall submit documentation to the CPM identifying the entity that will be responsible for curating collected specimens. This documentation shall 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 STANTON ENERGY CENTER
(16-AFC-01)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

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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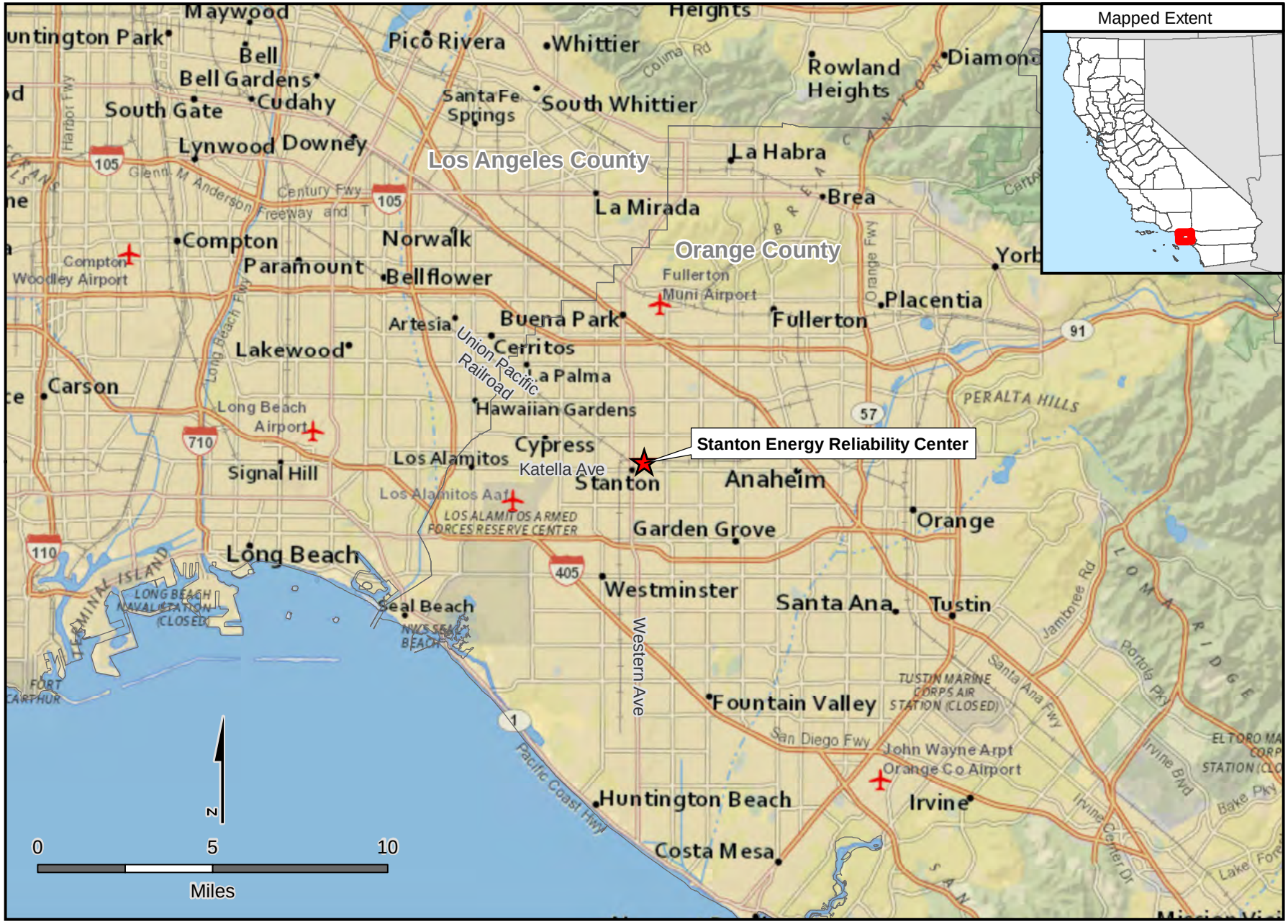
GEOLOGY AND PALEONTOLOGY - FIGURE 1

Stanton Energy Reliability Center - Regional Vicinity Map



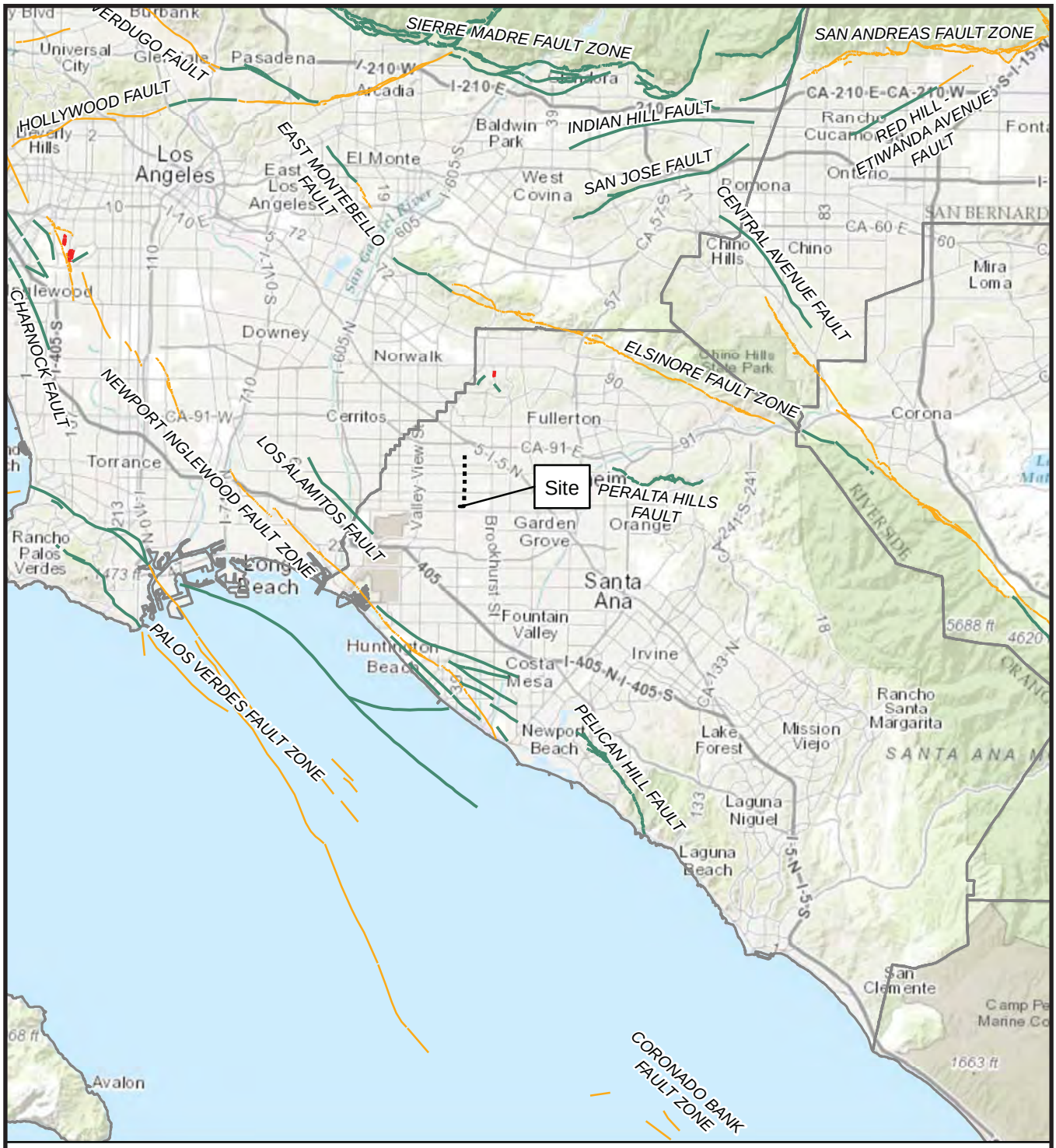
GEOLOGY AND PALEONTOLOGY

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: National Geographic World Map

GEOLOGY AND PALEONTOLOGY - FIGURE 2

Stanton Energy Reliability Center - Regional Fault Map



Source: Esri World Terrain Imagery, Califorina Geological Survey (GGS)

- Historically - Active (displacement within the last 200 years)
- Holocene - Active (displacement within last 11,700 years)
- Late Quaternary – Potentially Active (displacement within last 700,000 years)
- Quaternary – Potentially Active (displacement within last 1.6 million years)
- County Boundaries
- Proposed Natural Gas Pipeline Route Alternatives
- Project Site

N

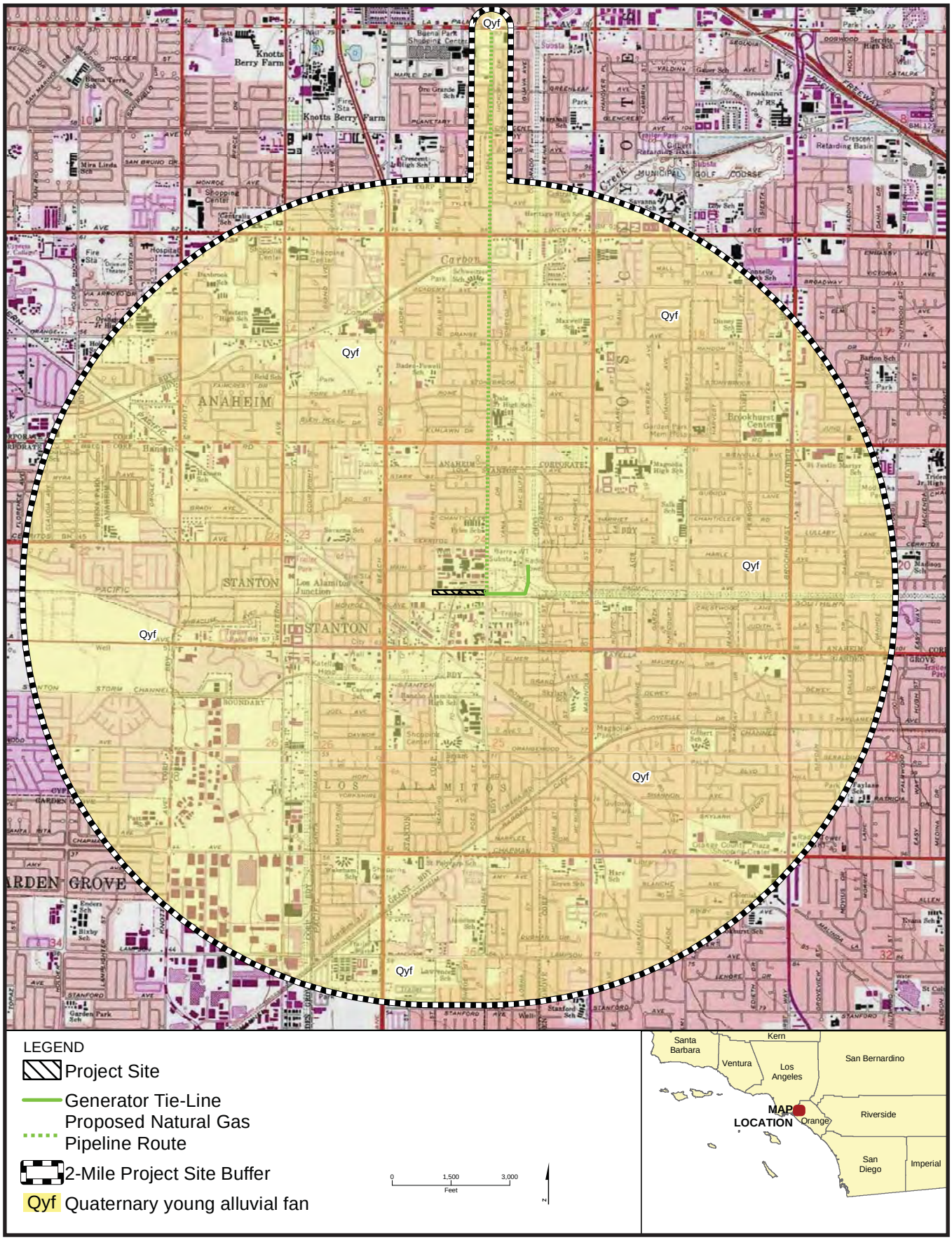
0 22,000 44,000 Feet

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CGS 2010

GEOLOGY AND PALEONTOLOGY - FIGURE 3

Stanton Energy Reliability Center - Surface Geology

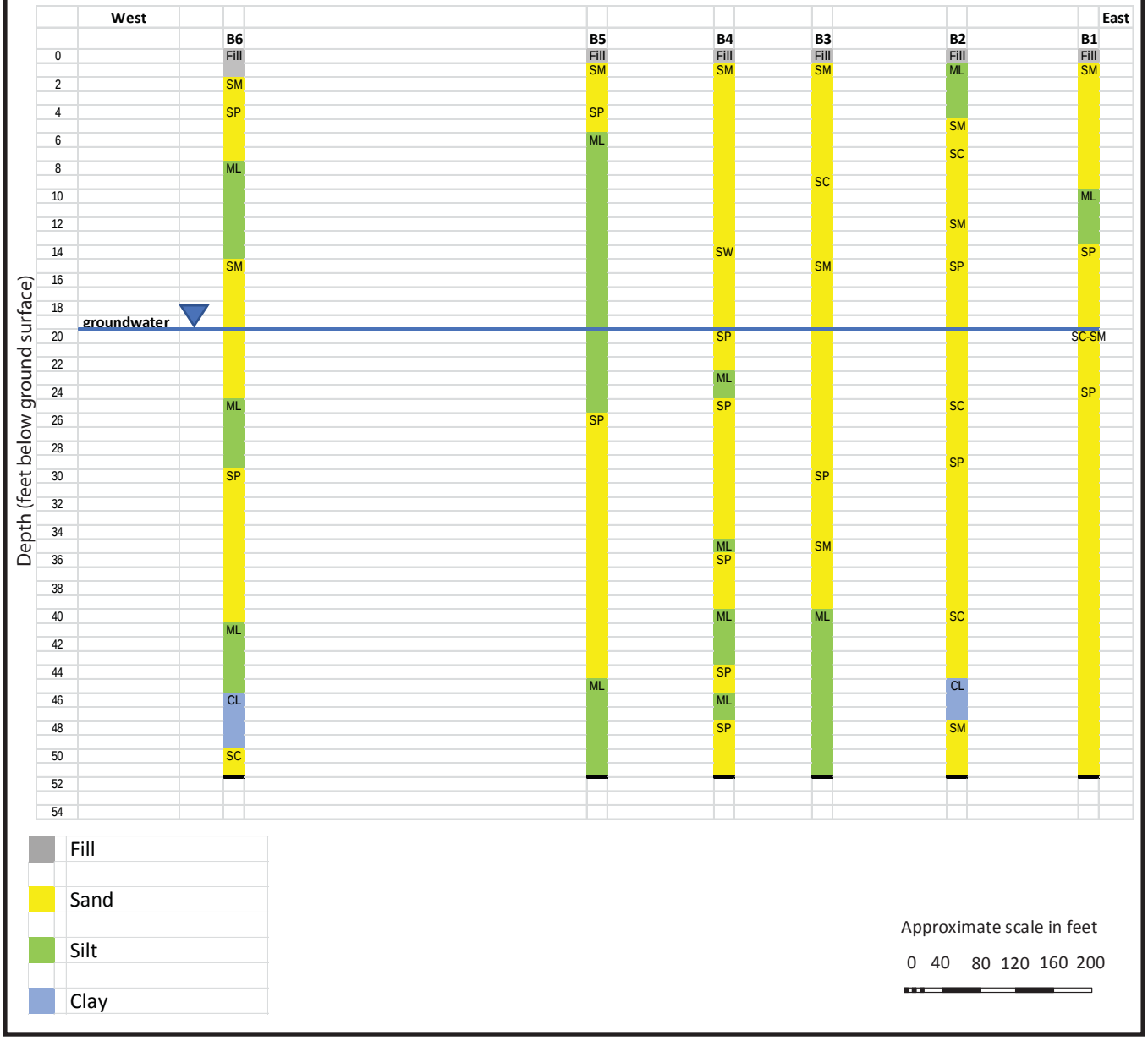


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: SERC 2016a – Figures 5.4-1a & 5.4-1b

GEOLOGY AND PALEONTOLOGY - FIGURE 4

Stanton Energy Reliability Center - Plan View and Boring Log Cross-Section



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: SERC 2016a; NV5 West 2016

POWER PLANT EFFICIENCY

Testimony of Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

Stanton Energy Reliability Center (Stanton or project) would generate 98 megawatts (MW) (net output[1]) of electricity and would operate at an overall project fuel efficiency of 41 percent lower heating value (LHV[2]) at 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 systems and synchronous condenser would not impact SERC'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 Stanton 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 average temperature of 65°F and relative humidity of 72 percent (SERC 2016a, AFC Figure 2.1-3)

SETTING

The applicant proposes to install and operate two General Electric (GE) LM6000PC SPRINT (spray intercooling of air compressor stages) natural gas-fired combustion turbine generators (also referred to as gas turbines, combustion turbines, or CTGs) in a simple-cycle configuration, two 10-MW, 4.3-MWh each, battery energy storage systems, and synchronous condensing capability. The energy storage system can be operated in conjunction with the CTGs or separately. Stanton would provide peaking and load following power[4] to the Orange County area (SERC 2016a, AFC §§ 1.0, 1.1, 1.2, 2.1.2).

For natural gas delivery to the project site, the applicant proposes a 12- or 16-inch-diameter pipeline running northerly on Dale Avenue 2.75 miles and connecting to the existing Southern California Gas Company (SoCalGas) natural gas transmission Line 1014 at LaPalma Avenue (SERC 2018i).

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 Stanton, by definition, consumes large amounts of energy. The project would consume natural gas at a maximum rate of

[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).

approximately 938 million Btu[5] (mmBtu) per hour (SERC 2016a, AFC § 2.2.3.1). 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). Stanton would generate electricity at a full-load efficiency of 41 percent (SERC 2016a, 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 (SERC 2016a, AFC § 2.1.3). This system would consist of two 10-MW, 4.3-MWh each, battery energy storage systems. The batteries would provide approximately 10 minutes of grid support during the ramping of the gas turbines from cold condition to full load, providing instantaneous and continuous response to the electricity grid. The batteries could operate without initiating a start of the CTGs, or could operate in conjunction with a CTG start. However, the battery system and CTGs cannot both provide full output simultaneously to the grid.

The batteries would be recharged either by operating the CTGs or by pulling electricity from the electricity grid. When the CTGs operate to recharge the batteries, electricity would still be generated at the rate of 41 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 the project's overall thermal efficiency.

Synchronous Condenser

Another feature proposed for these GE LM6000 equipment packages is the ability to operate the generators as synchronous condensers (SERC 2018e). When the synchronous condenser is engaged, the generator continues to spin with input power from the grid or battery storage system. In periods of electrical grid instability or when the grid is loaded with high inductive loads, this action allows the generator to sync up to the grid to provide grid voltage and frequency support in the form of reactive power, instead of real power when generating.

In this project, fuel would be burned to bring the generator up to speed to synchronize to the grid, within 3-6 minutes of startup. Immediately after this synchronization occurs, the fuel supply would be cut off and the high-pressure sections of the turbine and compressor would be shut down. However, since the generator rotor is connected to the low-pressure turbine and compressor spools, power input would be required, not only to spin the generator, but also the attached, unfired low-pressure combustion turbine and compressor spools. The applicant estimates that roughly 10 MW of power input would be needed for this, either from the grid or the batteries, which is about 20 times that for a fully disengaged generator. In most synchronous generator applications, the generator is decoupled from the prime mover/engine, and so, the entire turbine and compressor can be shut down. The applicant expects that Stanton would provide synchronous condensing only when there is an unexpected fault in the transmission grid.

[5] British thermal units

Since no natural gas would need to be consumed when the generator is spinning as a synchronous condenser, synchronous condensing would not impact Stanton'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 (SERC 2016a, AFC p. ES-1, §§ 2.1.7, 2.2.2.3, 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 spanning the Rocky Mountains, Canada, and the southwest. This represents a resource of considerable capacity.

Natural gas demand is both instantaneous and long-term (e.g., annual), and the partial closure and potential long-term de-rate of the SoCalGas' Aliso Canyon natural gas storage facility (Aliso Canyon), located north/northwest of the San Fernando Valley near Los Angeles, may impact instantaneous natural gas deliveries to the power plants it serves. This could potentially affect Stanton's fuel availability since the project site is located within the Aliso Canyon gas delivery area.

Dispatch orders generally call up for the most efficiently-generated energy first; especially when peaking capacity is required (the proposed project would consist of peaking CTG units). As a result, the older, less efficient plants are being displaced by modern and more efficient gas-fired power generation. The electric grid system's reliance on new and more efficient generation in the region rather than on the existing aging and less efficient plants would result in decreases in natural gas consumption per MW of generation and would help alleviate the potential effect of the partial closure of Aliso Canyon. The expected start date of commercial operation for the project is the 4th quarter of 2019 (SERC 2016a, AFC § 2.1.16, Table 2.1-3).

In response to the partial closure of Aliso Canyon, the CPUC issued Resolution E-4791, authorizing expedited procurement of storage resources to ensure electric reliability in the Los Angeles Basin (LA Basin). In April 2017, GE completed construction of a hybrid battery energy storage-gas turbine facility for Southern California Edison, at the Center facility site in Norwalk, California (Greentech Media 2017). The facility combines one of the two 50-MW GE LM6000 CTGs with a 10-MW, 2.8-MWh battery energy storage system. Alamitos Energy Center has obtained a permit to install 300 MW of battery energy storage and is currently installing 100 MW of the total 300 MW, which is scheduled to be online in 2021 (Alamitos 2016). No construction schedule or start date has been planned for the remaining 200 MW. Stanton would include two 10-MW, 4.3-MWh each, battery energy storage systems. These projects are within the Aliso Canyon's gas delivery area. Their battery storage systems can deliver electricity directly to, and draw electricity directly from, the electricity grid, mostly from renewable generation resources such as wind and photovoltaic. Therefore, these measures help alleviate the impact of any fuel shortfall from Aliso Canyon.

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 12- or 16-inch-diameter natural gas pipeline that would be connected to an existing SoCalGas natural gas transmission pipeline, either Line 1014, or Line 1244 (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 SERC.

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

Stanton's power block would be configured as two independent simple-cycle power trains, in which electricity is generated by two CTGs, each equipped with battery energy storage. This configuration, with its short start-up time and fast ramping[6] capability (and instantaneous response from the batteries), 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 Stanton. 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.

Although Stanton gas turbines would not consume energy in a wasteful or inefficient manner and would present no significant adverse impacts upon energy resources, one alternative technology that may eliminate onsite consumption of large amounts of natural gas associated with operation of the project's two gas turbines would be 100-percent battery energy storage. SERC's proposed simple-cycle units and battery storage system could be potentially replaced with a 100-MW battery storage system (maximum MW that could appropriately fit on the site) that would be fully fed from the electric transmission grid. Battery storage can provide operational flexibility, having the

[6] Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

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 project site. 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. 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 two GE LM6000PC SPRNT CTGs proposed for the Stanton project is nominally rated at 51 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 Pratt & Whitney (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.

Efficiency Table 1
Simple-Cycle Comparison at ISO Conditions

Gas Turbine	ISO Rated Gross Output (MW)	ISO Efficiency (Percent)
GE LM6000PC SPRNT	51	40
P&W FT4000 SwiftPac 60	52	41
Siemens SGT-800	53	39

Source: GTW 2016

[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 51 MW gross rating used here for the LM6000 turbine, resulting in 102 MW (51 x 2 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 98 MW net referenced elsewhere in this power plant efficiency analysis.

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 LM6000PC SPRNT 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, but uses more water from the direct evaporative cooling. Overall efficiency differences between these alternatives are relatively minor.

The applicant proposes an inlet air evaporative fogging system for the project's CTGs (SERC 2016a, AFC §§ 2.1.5, 2.1.8). The climate in the project area is mild, with occasionally high summer temperatures. Relative humidity ranges from low to moderate. Thus, the evaporative fogging system would operate well in this climate. Staff believes that the evaporative system proposed by the applicant would have no significant adverse energy impacts.

In conclusion, the project configuration (simple-cycle), generating equipment (LM6000PC SPRINT), and inlet air evaporative system chosen for Stanton 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 (SERC 2016a, 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 partially closed, it would not significantly affect the delivery of natural gas to Stanton (see **Adverse Effects on Energy Supplies and Resources** above for further discussion). Staff concludes that the SoCalGas system is adequate to supply the project without creating a significant cumulative impact.

RESPONSE TO COMMENTS ON THE PSA

Staff received no comments in the area of **Power Plant Efficiency**.

CONCLUSIONS

The project would generate 98 MW (net output) of electricity at an overall project fuel efficiency of 41 percent LHV at 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 condensing 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 for power plant efficiency.

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POWER PLANT RELIABILITY

Testimony of Edward Brady and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

Staff concludes that the Stanton Energy Reliability Center (Stanton or project) would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate an equivalent availability factor[1] between 92 and 98 percent. The battery energy storage systems and synchronous condensers would perform reliably and would not adversely affect project reliability. No conditions of certification are proposed for power plant reliability.

INTRODUCTION

This analysis evaluates Stanton 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.

[1] Equivalent availability factor is the percentage of time a power plant is available to generate electrical power, and reflects the probability of planned and unplanned (forced) outages.

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 (quality assurance/quality control) program (SERC 2016a, AFC § 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 (SERC 2016a, § 2.2.2.2, AFC 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. Also, the battery energy storage system would include redundant battery banks, inverters, and transformers. Because the project would consist of two 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 other train to continue to operate. Also, technology advancements have led to extremely high reliability for the CTG considered for this project, the General Electric (GE) LM6000 PC SPRINT (spray inter-cooling). 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 (SERC 2016a, AFC § 2.1.3). The batteries would provide approximately 10 minutes of grid support during the ramping of the gas turbines from cold condition to full load, providing instantaneous and continuous response to the electricity grid. This represents an advantage in response time to the grid reliability over projects without this feature.

The operational reliability of the battery system is independent of the reliability and operating characteristics of the CTGs, as is the reliability of the CTG independent of the reliability and operating characteristics of the battery system. The batteries would be charged either by the grid or by the CTGs. The batteries could operate without initiating a start of the CTGs or could operate in conjunction with a CTG start. However, the battery system and CTG cannot both provide full output simultaneously to the grid. In the event the battery system becomes unavailable, the CTGs would continue to be available and project availability factor would not be adversely affected.

The primary cause of a power plant's equipment breakdown is mechanical failure due to their high-speed moving parts (i.e., turbines, compressors, pumps, and fans). Equipment failure is more likely when the generating technology is immature. Batteries are a proven technology. They have no moving parts, and thus, are not prone to mechanical failure. The potential for failure of battery systems is limited to electrical-related issues (i.e., short-circuiting and overheating).

However, the applicant commits to preventive and predictive maintenance of project equipment (SERC 2016a, AFC § 2.2.2). The project's redundant components related to the battery system would include redundant battery banks, inverters, and transformers (SERC 2016a, AFC Table 2.2-1). The equipment would also be subject to commercial guarantees for both output and availability provided by the equipment vendor as is customary. The QA/QC program would include performing receipt inspections, testing of components, and administering independent testing contracts (SERC 2016a, AFC § 2.2.2.5). Furthermore, because Stanton would be expected to operate only up to 12.3 percent of the time (SERC 2016a, AFC § 1.5), there would be ample opportunity to conduct maintenance (including battery replacement if needed) during planned off-line periods, thus having no effect on the project's projected operating plan.

Therefore, the battery energy storage system would be able to demonstrate adequate operational reliability.

Synchronous Condenser

Another feature proposed for these GE LM6000 equipment packages is the ability to operate the generators as synchronous condensers (SERC 2018e). When the synchronous condenser is engaged, the generator continues to spin with input power from the grid or battery storage systems. In periods of electrical grid instability or when the grid is loaded with high inductive loads, this action allows the generator to sync up to the grid to provide grid voltage and frequency support in the form of reactive power, instead of real power when generating.

In this project, fuel would be burned to bring the generator up to speed to synchronize to the grid within 3-6 minutes of startup. Immediately after this synchronization occurs, the fuel supply would be cut off and the high-pressure sections of the turbine and compressor would be shut down. However, since the generator rotor is connected to the low-pressure turbine and compressor spools, power input would be required, not only to spin the generator, but also the attached, unfired low-pressure combustion turbine and compressor spools. The applicant estimates that roughly 10 MW of power input would be needed for this, either from the grid or the batteries, which is about 20 times that for a fully disengaged generator. In most synchronous generator applications, the generator is decoupled from the prime mover/engine, and so, the entire turbine and compressor can be shut down. The applicant expects that Stanton would provide synchronous condensing only when there is an unexpected fault in the transmission grid.

Synchronous condensing as configured on the Stanton project would be the first of its kind for a LM6000. Similar configurations have been used on the GE LM2500 and Pratt and Whitney FT4 CTG systems. The synchronous generator and its control system have been designed to provide reliable service and are proven solutions with more than

200 applications over nearly a century (GE 2014). Advancements in materials and manufacturing techniques, combined with modern control technologies, have greatly improved the reliability and functionality of this system. The generator would also be subject to commercial guarantees for availability provided by GE as is customary. The CTG's expected 92 to 98 percent availability factor is based on its well-established operating experience and includes the availability of the synchronous condenser function.

PLANT MAINTAINABILITY AND MAINTENANCE PROGRAM

Equipment manufacturers provide maintenance recommendations for their products, and power plant owners develop their plant's maintenance program based on those recommendations. Such a program encompasses both preventive and predictive maintenance techniques. Stanton would develop its maintenance program in the same way (SERC 2016a, AFC § 2.2.2). Additionally, because the project would be expected to operate only up to 12.3 percent of the time (SERC 2016a, AFC § 1.5), 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

Stanton would use natural gas supplied by Southern California Gas Company (SoCalGas) and would connect to a new gas metering station adjacent to the power block (SERC 2016a, AFC p. ES-1, §§ 2.1.7, 4.1). Gas supplies would be acquired from gas providers in supply regions accessible through the SoCalGas' natural gas transmission system. The applicant proposes a 12- or 16-inch diameter pipeline running northerly on Dale Avenue 2.75 miles and connecting to SoCalGas Line 1014 at LaPalma Avenue (SERC 2018i).

SoCalGas' natural gas transmission system is connected to natural gas resources spanning the Rocky Mountains, Canada, and the southwest. This represents a resource of considerable capacity and offers access to adequate annual supplies of natural gas. Natural gas demand is both instantaneous and long-term (e.g., annual), and the partial closure and potential long-term de-rate of the SoCalGas' Aliso Canyon natural gas storage facility (Aliso Canyon), located north/northwest of the San Fernando Valley near Los Angeles, may impact instantaneous natural gas deliveries to the power plants it serves. This could potentially affect Stanton's fuel availability since the project site is located within the Aliso Canyon gas delivery area.

Dispatch orders generally call up for the most efficiently-generated energy first; especially when peaking capacity is required (the proposed project would consist of peaking CTG units). As a result, the older, less efficient plants are being displaced by modern and more efficient gas-fired power generation. The electric grid system's reliance on new and more efficient generation in the region rather than on the existing aging and less efficient plants would result in decreases in natural gas consumption per MW of generation and would help alleviate the potential effect of the partial closure of Aliso Canyon. The expected start date of commercial operation for Stanton is the 4th quarter of 2019 (SERC 2016a, AFC § 2.1.16, Table 2.1-3).

In response to the partial closure of Aliso Canyon, the CPUC issued Resolution E-4791, authorizing expedited procurement of storage resources to ensure electric reliability in the Los Angeles Basin (LA Basin). In April 2017, GE completed construction of a hybrid battery energy storage-gas turbine facility for Southern California Edison, at the Center facility site in Norwalk, California (Greentech Media 2017). The facility combines one of the two 50-MW GE LM6000 CTGs with a 10-MW, 2.8-MWh battery energy storage system. Alamitos Energy Center has obtained a permit to install 300 MW of battery energy storage and is currently installing 100 MW of the 300 MW, which is scheduled to be online in 2021 (Alamitos 2016). No construction schedule or start date has been planned for the remaining 200 MW. Stanton would include two 10-MW, 4.3-MWh each, battery energy storage systems. These projects are within the Aliso Canyon's gas delivery area. Their battery storage systems can deliver electricity directly to, and draw electricity directly from, the electricity grid, mostly from renewable generation resources such as wind and photovoltaic. Therefore, these measures help alleviate the impact of any fuel shortfall from Aliso Canyon.

Therefore, staff believes there would be adequate fuel supply to meet the project's needs.

Water Supply Reliability

Stanton would be composed of two simple-cycle combustion turbine generators, so it would not have a steam cycle for power production. 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 and process water would be provided by Golden State Water Company (GSWC) (SERC 2016a, AFC §§ 2.1.9, 5.15.1). GSWC has provided a will-serve letter to supply this water to the project (SERC 2016b, AFC Appendix 2B). Thus, staff concludes that the project's source of 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 (see below for an explanation regarding tsunami). 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 (SERC 2016a, AFC §§ 5.4.1.4.2, 5.4.1.4.7). 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, it 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 project site is located in the Federal Emergency Management Agency's (FEMA's) 500-year flood zone and in a 100-year flood zone for very shallow flooding (less than one foot deep) (SERC 2016a, AFC § 5.15.1.4). The 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, Stanton would be designed and constructed in accordance with the CBC, as required by **GEN-1**. Furthermore, since the project site is not a coastal area and is located approximately 8 miles from the Pacific Ocean and roughly 70 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 SERC's CTGs are rated slightly above 50 MW (52 MW gross), they fall within this range, and thus staff uses this 88.9 percent availability factor for comparison to Stanton.

Each one of the project's two CTGs would be a modern GE LM6000PC SPRINT (spray intercooling) gas turbine. This is a highly successful turbine generator, which has been in commercial operation for years and has exhibited high reliability. The project'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, and warranty claims, as well as QA/QC during the commissioning and start-up of the facility (SERC 2016a, AFC § 2.2.2.5). 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.

RESPONSE TO COMMENTS ON THE PSA

Staff received no comments in the area of **Power Plant Reliability**.

CONCLUSIONS

Staff concludes that Stanton would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate an equivalent availability factor between 92 and 98 percent. The battery energy storage systems and synchronous condensers 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 reliability conditions of certification are proposed.

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SERC 2018i – DayZen LLC/Scott A. Galati (TN 223414). Stanton Energy Reliability Center LLC's Final Comments on the Preliminary Staff Assessment, dated April 30, 2018. Submitted to CEC/Docket Unit on April 30, 2018

TRANSMISSION SYSTEM ENGINEERING

Testimony of Mark Hesters

SUMMARY OF CONCLUSIONS

The proposed Stanton Energy Reliability Center (Stanton) electric transmission outlet lines and termination are acceptable and would comply with all applicable laws, ordinances, regulations, and standards (LORS).

- The Southern California Edison (SCE) Generator Interconnection Agreement (GIA) for Stanton found that Stanton could be reliably connected to the SCE sub-transmission system without any additional facilities beyond those needed for the direct interconnection of the proposed project.
- The proposed project should be designed and constructed with adequate reactive power resources to compensate the consumption of volt-ampere reactive power (Var) by the generator step-up transformers, distribution feeders and generator tie-lines and maintain a 0.95 power factor at the plant point of interconnection (POI).

The Stanton project could be reliably interconnected to the SCE sub-transmission network without additional facilities, other than those proposed by the applicant.

INTRODUCTION

STAFF ANALYSIS

This transmission system engineering (TSE) analysis examines whether the Stanton proposed interconnection conforms to all 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 (Title 14, California Code of Regulations §15378). The Energy Commission must therefore identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and that represent the whole of the action. Commission staff relies upon the responsible interconnecting authority for analysis of impacts on the transmission grid, as well as for the identification and approval of new or modified facilities required downstream from the proposed interconnection for mitigation purposes. The proposed project would connect to SCE's 66-kV transmission network and requires both analysis by SCE and the approval of the California ISO.

ROLE OF SOUTHERN CALIFORNIA EDISON

The Stanton project generation would be dispatched to the California Independent System Operator (California ISO) grid via SCE's 66kV bus at the Barre substation. 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.

ROLE OF CALIFORNIA INDEPENDENT SYSTEM OPERATOR

The California ISO is responsible for ensuring electric system reliability for all participating transmission owners and is also responsible for developing the standards necessary to achieve system reliability. The project power will be dispatched to the California ISO grid via SCE's 66kV bus at the Barre substation. Therefore, California ISO reviews the studies of the SCE system to ensure adequacy of the proposed transmission interconnection. The California ISO determines the reliability impacts of the proposed transmission modifications on the SCE transmission system in accordance with all applicable reliability criteria. According to its tariffs, the California ISO will determine the "need" for transmission additions or upgrades downstream from the interconnection point to insure reliability of the transmission grid. On completion of SCE's interconnection study, the California ISO will review the study results, provide its conclusions and recommendations, and issue a final approval/disapproval letter for the interconnection of the proposed Stanton project. The California ISO may provide 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/Federal Electric Reliability Commission (FERC)/SCE 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 LGIP and LGIA to be followed for any large generator interconnection to the California ISO controlled grid (California ISO 2010a).

PROJECT DESCRIPTION

The applicant proposes to construct the Stanton project, a hybrid electrical generating station, and an energy storage facility in the city of Stanton in Orange County, California. The Stanton project would consist of two General Electric LM 6000 based combustion turbine generators (CTG). Each CTG would consist of a natural gas-fired, simple cycle combustion turbine, and an integrated 10 Megawatt (MW) GE battery energy storage system. Each 50 MW CTG unit would generate maximum plant net

output of 47.23 MW. The auxiliary load for each CTG unit would be 2.77 MW, resulting in a maximum net plant output of 94.46 MW (SERC 2018n, pages 1 and 2).

Each CTG unit would be connected to the low side of 13.8/66 kV and 100/130/170 megavolt ampere (MVA) generator step-up (GSU) two-winding transformer through a 13.8 kV, 3,000 ampere breaker. The high side of each GSU transformer would connect to the 66 kV Skip substation (Skip is the name SCE has given for the Stanton project switchyard). From the Skip substation Stanton would connect to SCE's 66kV bus at the Barre substation through a 0.35-mile long underground 66 kV three-phase cable. A single dead-end pole structure, located in the SCE Barre substation, would transition the cable from underground to the overhead bus bar at Barre (SERC 2018n, pages 1 and 2).

The project's switchyard, the Skip substation, would be built with two separate 4,000 Amp bus bars. Each bus bar would connect with a 47.3 MW CTG unit and two 5 MW battery storage units via inverters. Each CTG unit common bus bar would connect to the low side of the two-winding transformer through a disconnect switch. Auxiliary loads of each CTG unit and battery storage would be supported by dedicated step-down transformers. Startup and stand-by power would be supplied through the generator step-up transformer and two auxiliary transformers. Auxiliary controls and protective relay systems for the project's switchyard would be located in the switching control building.

The proposed commercial operation date of the project is December 15, 2019. (SERC, 2017a section 2.0 pages 2-1 to 2-14 and Figure SERC-E-001)

INTERCONNECTION FACILITIES

The applicant proposes to build an underground circuit with 6,000 feet of bundled 3,000 Copper Cross-linked Polyethylene (CU XLP) and a 400 foot bundled overhead single circuit with 954 Aluminum Stranded Conductor Cross-Linked Polyethylene and Sheathed conductor (SAC) for the generator-tie-line from the project's site to the 66 kV switch rack of the Barre substation. The proposed generator tie-line is rated to carry the full load output of the project and runs east from the project site, crossing under Dale Avenue and paralleling the Union Pacific railway along the boundary of the property on which the Barre peaker is located, turning northeast to connect with SCE's 66kV bus at the Barre substation. (SERC, 2017a section 2.0 pages 2-1 to 2-14 and Figure SERC-E-001)

INTEGRATED ENERGY STORAGE

The applicant has proposed to install four 5MW/4.3MWh lithium-ion battery storage systems at the project site. The system can be operated in conjunction with the thermal power plant using the CTG hybrid technology. The storage system would consist of three main components: batteries; inverters; and feedback control equipment. Each set of batteries would be installed in battery enclosure to meet fire protection requirements and provide secondary containment. The battery system has the capability to regulate the voltage, frequency, and store and supply power to the grid.

The proposed facilities are acceptable and staff proposed conditions of certification TSE-1 through TSE-5 would insure that the project remains in compliance with LORS.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

To ensure grid reliability, the interconnecting utility, SCE, and the control area operator, California ISO, determine the transmission system impacts of the proposed project and any mitigation measures needed to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and California ISO reliability criteria. The Phase I and Phase II Interconnection Studies as well as the Large Generator Interconnection Agreement 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 whether downstream impacts or indirect project impacts would require additional equipment or strategies to bring the transmission network into compliance with applicable reliability standards.

CALIFORNIA ISO STUDY

The QC9 Phase II study base cases were developed from the on-peak and off-peak base cases used by SCE and the California ISO for the SCE Metro Area. The Phase II Interconnection Study includes Power Flow study, Short Circuit Duty study, Transient Stability Evaluation, Post-Transient Voltages Stability study, and Deliverability Assessment. The Power Flow study assessed the Queue Cluster 9 generation projects' impact on thermal loading of the transmission lines and equipment. A Short Circuit Duty study was conducted to determine if the Queue Cluster 9 generation projects would overstress existing SCE substation facilities, adjacent utility substations, and the other 66 kV, 115 kV, 230 kV and 500 kV busses within the study area. Transient stability analysis was conducted to determine whether the generation projects would create instability in the system following certain selected outages. A Post-Transient Voltage Stability Analysis was conducted to determine whether the generation projects would create voltage deviations in the system following lines and equipment outages. Details of the study assumptions, new generation projects, and system upgrades are described in the Phase I Interconnection Study Report.

SCE RELIABILITY ASSESSMENT

SCE performed power flow analysis and reactive power deficiency analysis to ensure that SCE's transmission system remains in full compliance with NERC reliability standards, as well as other NERC/WECC reliability standards. With the proposed interconnections, the reactive power deficiency analysis also determines whether the asynchronous facilities proposed by the projects in the interconnection queue are required to provide 0.95 leading/lagging power factors at the point of interconnection. The base cases were developed to represent stressed scenarios of loading and generation conditions for the study group area.

Power Flow Study Results Of Bulk System

The addition of the QC9 projects did not trigger any thermal overloads or create voltage violation on the system in the Metro Area.

Power Flow Study Results Of Sub Transmission System (66kV System)

The addition of the QC9 projects did not trigger any thermal overloads or create voltage violation on the system in the Metro Area.

Transient Stability Evaluation For Bulk And 66kV System

The transient study was conducted for the critical single and double contingencies affecting the area listed in appendix F in the SCE study. The three-phase faults with normal clearing are studied for single contingencies; single line-to-ground faults with delayed clearing were studied for double contingencies. All outage cases were evaluated with the assumption that existing special protection schemes (SPS) or remedial action schemes (RAS) would operate as designed where required. The transient stability study indicates there would be no system performance issues caused by the projects providing 0.95 power factor correction as measured at the point of interconnection for each of the projects in the cluster.

Short-Circuit Duty Study For Bulk System And 66kV System

Short-circuit studies were performed to determine the fault duty impact of adding the QC9 projects to the SCE system and to ensure system breaker coordination. The fault duties were calculated with and without the projects in QC9 in order to identify any overstressed equipment. Once overstressed circuit breakers were identified, the fault current contribution from each individual project in QC9 was determined. All bus locations where the QC9 projects increase the short circuit duty by 0.1 kA or more and where duty was found to be in excess of 60% of the minimum breaker nameplate rating are listed in the area report (appendix H).

Study results

The study also identified a number of 66kV circuit breakers on the Barre A, B and C sections of the substation that would require upgrades under an assumption that the Barre 66 kV sectionalizing bus breakers were closed during loss of an A bank. These breakers are scheduled for replacement with the new breakers in-service by December 31, 2019 whether or not Stanton is operating. A new short-circuit study will be completed once the new breakers are installed. (SERC 2018j, Page 103).

SCE Substation With Ground Grid Duty Concerns

The Short circuit study identified seven existing substations where the QC9 projects increased the substation ground grid duty by at least 0.25 kA. These substations need to be further evaluated by SCE for ground grid duty analysis.

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 them.

COMPLIANCE WITH LORS

The QC9 study indicates that the project interconnection would comply with NERC/WECC planning standards and California ISO reliability criteria. The applicant would design and build the proposed 66 kV underground/overhead transmission line.

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 Stanton project 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 would 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 would be built to required specifications and the operation of the facilities would comply with applicable LORS.

CONCLUSIONS AND RECOMMENDATIONS

- The Stanton project could be reliably interconnected to the SCE sub-transmission network without additional facilities, other than those proposed by the applicant.
- The SCE LGIA identified conceptual interconnection facilities and Barre substation upgrades that are necessary to interconnect the Stanton project. The proposed upgrades would be done within the Barre substation therefore no additional environmental analysis is required.
- The staff proposed conditions of certification would ensure that the project is constructed incompliance with applicable LORS.

PROPOSED CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the compliance project manager (CPM) and to the delegate chief building official (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(s) 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) A copy of the executed LGIA signed by the SCE 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, CPUC 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*, CA ISO standards, National Electric Code (NEC), and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment;

b) For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions,"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95, CPUC 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); and

d) A copy of the executed Large Generator Interconnection Agreement (LGIA) signed by SCE 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.

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.

[1] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

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 General Order (GO) 95, CPUC GO 128, or NESC, Title 8, CCR, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", applicable interconnection standards, as well as 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, CPUC 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, and 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.

California ISO (California Independent System Operator) 2002a – California ISO Planning Standards, February 7, 2002.

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NERC (North American Electric Reliability Council). 2006. Reliability Standards for the Bulk Electric Systems of North America, May 2006.

SERC 2016a – Stanton Energy Reliability Center, LLC (TN 214206-2 to 27). Application for Certification Vol.1, dated October 26, 2016. Submitted to CEC/Docket Unit onOctober 27, 2016.

SERC 2016b – Stanton Energy Reliability Center, LLC (TN 214207-1 to 37). Application for Certification Vol.2, dated October 26, 2016. Submitted toCEC/Docket Unit on October 27, 2016.

SERC 2016h – DayZen LLC/Scott A. Galati (TN 214973). Repeated Application for Confidential Designation Stanton Energy Reliability Center LLC's Response to CEC Staff Data Adequacy Question DAS 3-1, dated December 21, 2016. Submitted to Robert Oglesby/CEC/Docket Unit on December 21, 2016.

SERC 2016i – CH2M/Applicant Consultant (TN 215097). Stanton Energy Reliability Center Application for Certification Data Adequacy Supplement, dated December 21, 2016. Submitted to John Heiser/CEC/Docket Unit on December 22, 2016.

SERC 2017a – CH2M/Applicant Consultant (TN 215165). Attachment DA3. 0-1 One-Line Diagram. Submitted to John Heiser/CEC/Docket Unit on January 5, 2017.

SERC2017b – CH2M/Applicant Consultant (TN 217461). Stanton Energy Reliability Center Application for Certification Data Request Response, Set 1 (A1-A63). Submitted to CEC/Docket Unit on May 5, 2017.

SERC2017c – CH2M/Applicant Consultant (TN 217681). Stanton Energy Reliability Center Application for Certification Data Request Response, Set 1 (A1-A5). Submitted to CEC/Docket Unit on May 22, 2017

SERC 2018j – DayZen LLC (TN 223402). Southern California Edison Company Generator Interconnection Agreement for Stanton Energy Reliability Center. Submitted to CEC/Docket Unit on May 8, 2018.

SERC 2018n – Stanton Energy Center LLC (TN 223447). Stanton Energy Reliability Center LLC's Project Status Report No. 13, dated May 2018. Submitted to CEC/Docket Unit on May 11, 2018.

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.
Under build	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.

Alternatives

ALTERNATIVES

Testimony of John Hope

INTRODUCTION AND SUMMARY OF CONCLUSIONS

In this final staff assessment (FSA) of the Stanton Energy Reliability Center (Stanton or the project), Energy Commission staff (staff) concludes that the project's environmental impacts would be reduced to less than significant levels with implementation of recommended conditions of certification and through compliance with applicable laws, ordinances, regulations, and standards (LORS). Nonetheless, this alternatives analysis evaluates a reasonable range of potentially feasible alternatives to the project to foster informed decision making and public participation.

Staff reviewed the alternatives analysis contained in the Stanton Application for Certification (AFC) (SERC 2016). In addition to the no project alternative, the AFC discusses alternative site locations for constructing and operating the project, alternative project design features (including linear routes and water supply source), and various technology alternatives. The information provided in the AFC served as a starting point for the staff's evaluation of alternatives. The alternatives further reviewed and considered in this alternatives analysis include three off-site alternatives, a 100-percent battery energy storage alternative, and the no project alternative. The no project alternative presented here evaluated a no-build scenario at the project site.

Off-site alternatives would not meet most of the basic project objectives, were infeasible, were unable to avoid significant environmental impacts, or any combination thereof. The Battery Energy Storage Alternative could contribute to meeting the underlying project purpose and would reduce some environmental impacts, but would not provide an equivalent level of local reliability that the proposed project would. The No Project Alternative could avoid several environmental impacts relating to construction and operation of the proposed project, but it would not attain the project's basic objectives and would not provide electrical system benefits.

CEQA REQUIREMENTS

As the California Environmental Quality Act (CEQA) lead agency for the Stanton 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 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 project, even if these alternatives that 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, as is the case here (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.

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 the project's primary objective to be a state-of-the-art energy reliability resource. Stanton is designed to deliver reliability services with a minimal carbon footprint and a low emissions profile through the use of EGT technology which combines a combustion gas turbine with an integrated battery storage component operated by a proprietary software system (SERC 2016).

In addition to the primary objective, these are the basic project objectives:

- Safely construct and operate an electrical energy reliability facility to meet Southern California Edison's (SCE) need for local capacity in the West Los Angeles sub-area of the Los Angeles (LA) Basin local reliability area (LRA) of its service territory;
- Use Wellhead's patent pending EGT technology to provide the following:
  - Greenhouse gas (GHG)-free operating reserve,
  - Flexible capacity without start time,
  - Peaking energy for local contingencies,
  - Voltage support and primary frequency response without fuel burn, and
  - Superior transient response attributable to co-location of gas turbines and battery gas turbine management of battery state-of-charge in real time;
- Site the project as near as possible to an SCE substation with available transmission capacity to serve the West LA Basin and minimize the generation tie-line length;
- Site the project in an existing industrial area on a previously disturbed site to minimize environmental impacts;
- Site the project in a community that embraces the project and its new technology; and
- Safely construct and operate an electrical energy reliability project that would satisfy the commercial obligations of both Resource Adequacy Purchase Agreements (RAPA).

Staff's alternatives analysis broadly interprets the applicant's project objectives to foster a robust analysis of potential alternatives to the applicant's proposed project, including three off-site alternatives and an alternative that would develop and install 100 megawatts (MW) of battery energy storage capacity at the project site.

POTENTIAL FOR STANTON TO CONTRIBUTE TO LOCAL GRID CAPACITY REQUIREMENTS

The California Public Utilities Commission (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.[1] 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) ordering SCE to procure between 1,400 and 1,800 MW of electrical capacity in the West LA Basin to meet the identified long-term local capacity requirements (LCR) by 2021 (CPUC 2013a). The authorization for new capacity was done to maintain reliability after the potential retirement of approximately 7,000 MW of OTC capacity in the West LA Basin and Big Creek/Ventura local areas. Subsequently, in March 2014, the CPUC issued decision D.14-03-004 (referred to as the Track 4 Decision) ordering SCE to procure an additional 500 to 700 MW by 2021 to meet local capacity needs stemming from the retirement of the San Onofre Nuclear Station (CPUC 2015).

Using EGT technology, Stanton would combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art energy storage technology to provide new local capacity and reliability services specifically in the West LA Basin LRA of SCE's service territory. To achieve Stanton's primary objective, the applicant participated in SCE's 2013 Local Capacity Requirements Request for Offers (2013 LCR RFO) by submitting several project proposals. SCE, with the assistance of an independent evaluator and the CPUC's Procurement Review Group, considered over 100 proposals in this procurement and selected Stanton (SERC 2016). SCE and the applicant entered into a RAPA resulting from the 2013 LCR RFO, for two simple cycle combustion turbines with a total expected contract capacity of 98 MW, which was approved by the CPUC in November 2015 (CPUC 2015). SCE and the applicant entered into a second RAPA pursuant to SCE's 2014 Energy Storage Request for Offers, which was approved by the CPUC in September 2016. That contract is for 1.3 MW of lithium-ion battery storage capable of providing its contract capacity for a 4-hour period, or 5.2 megawatt-hours (MWh) (CPUC 2016).

POTENTIAL PROJECT IMPACTS

Several potential environmental impacts relating to Stanton's construction and operation listed below would be reduced to less-than-significant levels with mitigation measures imposed and through LORS compliance. For the purposes of producing a robust alternatives analysis, staff analyzed whether any alternatives were feasible that could avoid these impacts altogether. These potential impacts include the following:

- risk of impacts to sensitive biological resources;

[1] 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.

- risk of impacts to as-yet unknown buried archaeological or paleontological resources;
- risk of earthquake-related ground shaking effects on structures;
- risk of accidental release of hazardous materials;
- risk of accelerated water erosion and sedimentation;
- risk of impacts on human health and the environment from removal of wastes or release of on-site contaminants;
- noise and vibration impacts;
- impacts relating to workforce traffic; and
- increased air emissions and associated air quality and public health impacts during construction and operational activities at the project site.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED CONSIDERATION

As discussed, the alternatives analysis should identify alternatives that were initially considered but rejected from further consideration. In addition, CEQA requires a brief explanation of the reasons underlying the lead agency's determination to eliminate alternatives from detailed analysis.

Of the preferred resources discussed in the **Introduction** section of this staff assessment, staff concluded that energy storage was the only reasonably feasible preferred resource to carry forward for detailed consideration as a project alternative. Energy efficiency and demand response programs are included in planning assumptions when determining new capacity needs and are not achievable alternatives by the applicant. Distributed solar (constituting the majority of distributed renewables) is not dispatchable, and thus lacks the most significant operating characteristic of natural gas fired generation. Lastly, utility scale renewable generation such as wind and solar require significantly larger development sites than Stanton and are intermittent generation resources, which would not meet the primary objective of Stanton to provide local reliability. See the "Meeting California's Energy Needs" subsection of the **Introduction** section of this staff assessment for detailed information about the energy planning and procurement process and the roles of these preferred resources. Also see the **Power Plant Efficiency** section of this staff assessment for evaluation of project alternatives that could reduce wasteful, inefficient, or unnecessary energy consumption. The Battery Energy Storage Alternative is analyzed later in this section.

ALTERNATIVE OFFSITE LOCATIONS EVALUATION

The intent of evaluating alternative offsite locations for the potential construction and operation of a project is to reduce or eliminate significant impacts associated with the proposed site. However, staff concludes environmental impacts associated with siting the project at the Stanton project site would be reduced to less than significant with implementation of conditions of certification and through LORS compliance. The Stanton site meets the project objectives well. It is a brownfield site with easy access to the Barre Substation, is at a critical location within SCE's service territory, is zoned appropriately for industry, and is supported by the city of Stanton. However, for informational purposes, staff summarizes below the applicant's final site selection options and conclusions. The key screening criteria used by the applicant to select the project site and alternative offsite locations for consideration included the following:

- Location within SCE's service territory,
- Ability to gain site control,
- Availability of sufficient land area (approximately 4 acres),
- A host city that would see the benefits in hosting this type of reliability resource,
- Proximity to existing transmission and distribution lines and to an existing substation with transmission capacity,
- Location near a source of water supply of sufficient quantity and quality,
- Consistency and compatibility with the applicable zoning ordinances and existing land uses, and
- The ability to avoid or minimize potentially significant impacts on the environment.

All sites not large enough to accommodate the Stanton project were rejected on the basis that they could not attain the primary project goal and most of the project objectives thereby resulting in six sites remaining. Two of these remaining sites were rejected because a project located on any of these sites was not acceptable to the local jurisdictions. Specifically, the city of Stanton has been working closely with the applicant and agreed that use of the proposed site is consistent with their zoning ordinance and general plan designations, and executed a cooperation agreement.[2] In addition to the project site, the following three sites were carried forward for further environmental analysis by the applicant.

Alternative Site 1: Warner Site

The Warner Site is a rectangular parcel encompassing approximately 4.5 acres at 1312 East Warner Avenue within the city of Santa Ana. The Warner Site is approximately 10 miles southeast of the Stanton project site. The site is bounded by East Warner Avenue to the north, Orange County Fire Station No. 79 property to the east, the existing SCE Johanna Substation to the south, and Beeson Lane to the west. The site is within a large industrial area, with residential areas to the west.

[2] City of Stanton, *Stanton Energy Reliability Center City of Stanton Review*, letter from City of Stanton to Energy Commission dated October 25, 2016. Available in Land Use, Appendix 1.

The Warner Site is currently being used by an asphaltic concrete contractor. An existing warehouse building is located in the northwestern corner of the property and is used for equipment maintenance and storage. The remainder of the property is used for truck parking and stockpiling of materials for use in the making of asphaltic concrete. The current zoning and General Plan are consistent with industrial uses. The site is adjacent to the Johanna Substation and was selected for evaluation because of SCE's need for generation at the Johanna Substation.

The natural gas pipeline would extend easterly along Warner Avenue and interconnect to an existing natural gas pipeline on the eastern side of South Grand Avenue. The generation tie-line would be underground directly into the adjacent Johanna Substation. Water would be provided to the site by the city of Santa Ana Municipal Utility via an existing water pipeline located in Warner Avenue.

The Warner Site was eliminated from further detailed consideration for the following reasons:

- The site is located within the flight path (conventional west arrival pattern) and located within a notification area and airport obstruction imaginary surface area for the primary runway for John Wayne Airport, thereby creating potential issues with thermal plumes from the plant, and
- Contaminated soils and groundwater are potentially present beneath the site, along with known California Department of Toxic Substances Control issues at the site immediately to the north.

Alternative Site 2: Birch Street Site

The Birch Street Site encompasses approximately 7.8 acres and is located at 2620 Birch Street in Santa Ana. This site is approximately 9 miles southeast of the Stanton site and approximately 1 mile west of the Warner Site. The site is bounded on the north by a restaurant depot and parking area for food trucks, on the east by Birch Street, on the south by an existing nursery, and on the west by an abandoned rail spur and industrial uses. The zoning and General Plan are consistent with industrial uses. The area is generally dominated by industrial uses with the closest residential areas approximately 0.25 mile to the west and to the south of the site.

The parcel is currently developed with a large unoccupied building that would need to be demolished. A preliminary records search has revealed that the property was once used by BASF for the making of high-quality recording tape and was subject to groundwater cleanup.

The natural gas pipeline for the Birch Street Site would extend northward along Birch Street and then would proceed easterly along Warner Avenue and interconnect to an existing natural gas pipeline on the eastern side of South Grand Avenue, 1.45 miles away. The generator tie-line would be underground and would likely be in the same route as the natural gas pipeline stopping at Johanna Substation, 1.33 miles away. Water would be provided to the site by the city of Santa Ana Municipal Utility via an existing water pipeline located in Birch Street.

The Birch Street Site was eliminated from further detailed consideration for the following reasons:

- The site is located within the flight path (conventional west arrival pattern) and located within the FAR Part 77 notification area and airport obstruction imaginary surface area for the primary runway for John Wayne Airport, thereby creating potential issues with thermal plumes from the plant.

Alternative Site 3: Carson Site

The Carson Site is located at 18937 Main Street in Carson, California. It encompasses approximately 4.6 acres and is zoned Heavy Manufacturing. The site is bounded on the north by Griffith Street, on the east by Main Street, on the south by an existing trucking facility, and on the west by Broadway Street. The site was historically used for manufacturing wood-based products between approximately 1940 and 1980.

The Carson Site was eliminated from further detailed consideration for the following reasons:

- Contaminated soils and groundwater are potentially present beneath the site, and
- The Goodyear Blimp operates less than 1,000 feet away thereby creating a potential for thermal plumes to adversely impact blimp operations.

As stated previously, staff concludes environmental impacts associated with siting the project at the Stanton project site would be reduced to less than significant with implementation of conditions of certification and through LORS compliance. In conclusion, staff eliminated alternative offsite locations from further detailed consideration because they would not avoid significant environmental effects of the project and would cause significant effects that would not be caused by the project.

ALTERNATIVES EVALUATED IN DETAIL

In addition to the No Project Alternative, staff created a conceptual design for a 100 MW/50 MWh Battery Energy Storage Alternative that would be installed and operated at the Stanton site. This alternative is included because it would avoid on-site use of fossil fuels for power generation, but could contribute to meeting the local capacity requirement. Summary discussions are provided below comparing the environmental effects of these alternatives to the Stanton project. Environmental impacts that could potentially occur under a project alternative but that would not occur under Stanton are also discussed.

BATTERY ENERGY STORAGE ALTERNATIVE

Staff evaluated the comparative environmental impacts of developing additional battery energy storage in place of the proposed turbine generators at the Stanton site. Staff developed a conceptual site plan for this alternative to replace the proposed combustion turbine generators at the site with as much battery charging and storage capacity as could reasonably fit in the proposed project footprint (see **Alternatives Figure 1**). The conceptual design is generally based on the proposed battery energy storage system for the Stanton project.

The Stanton AFC states the proposed project would include a battery energy storage system of two 10 MW/5 MWh lithium-ion batteries (SERC 2016 p. 2-1). Therefore, staff estimates the Stanton battery project could be capable of delivering up to 20 MW of power for half an hour (20 MW x .5 hours = 10 MWh). Additionally, as stated above, the project has a contract for 1.3 MW of battery storage capable of providing its contract capacity for a four-hour period (1.3 MW x 4 hours = 5.2 MWh). So staff also estimates the project's battery storage system would have the flexibility to discharge within a range of varying energy to power ratios for varying periods (e.g. 20 MW for half an hour or 2.5 MW for four hours, both totaling 10 MWh).

The Battery Energy Storage Alternative would consist of a battery charging and storage system that would expand the proposed battery energy storage five times. Specifically, four additional 20 MW battery energy storage units would be placed where the two generators are proposed on Parcel 1 for a total power rating of 100 MW. Staff estimates that under this alternative, the 100 MW charging and storage units would be able to provide 50 MWh of energy. For example, depending on design and intended purpose a system of this energy storage capacity could be capable of delivering 100 MW for half an hour (100 MW x .5 hours = 50 MWh) or 12.5 MW for four hours (12.5 MW x 4 hours = 50 MWh).

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 a contract to provide local resource adequacy services to SCE and the California ISO.[3]

Battery energy storage can provide reliability services, including frequency regulation, transmission congestion relief, electric supply reserve capacity, voltage support, and load shifting.[4] 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 the Stanton project design as proposed. Energy from the transmission grid would be used to charge the batteries instead of the two onsite combustion turbine generators. 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 batteries were allowed to charge the batteries and discharge electricity to the grid. The probable sources of energy used to recharge the batteries

[3] A key project objective, discussed above, is to contribute to meeting the local capacity requirement (LCR) need established by the California ISO for the West LA Basin. 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.

[4] 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).

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.

Potential to Attain the Project Objectives

The first project objective is to provide a state-of-the-art energy reliability resource and to construct and operate an electrical energy reliability facility to meet SCE's need for local capacity in the West LA Basin local reliability area of its service territory. Staff's Battery Energy Storage Alternative could contribute to meeting the local capacity need (i.e., the underlying project purpose) and would reduce or avoid some environmental impacts associated with operation of two turbine generators. Although this alternative could contribute to meeting the LCR need (i.e., the underlying project purpose) and would further reduce some less-than-significant environmental impacts associated with a natural gas-fired project, this alternative would not provide an equivalent level of long-term, local reliability (i.e., greater than 50 MWh of energy) that the proposed project would.

Potential Feasibility Issues

Staff concludes that developing a full battery energy storage project at the Stanton 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 Stanton site would require a new project design proposal, environmental analysis, the negotiation and signing of a new RAPA, and other permitting required by the local jurisdiction. This work would delay the project and could affect its viability as an alternative.

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 alone would compare to doing so with natural gas-fired generation and battery energy storage, as proposed. 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

The summary discussions below focus on potential environmental effects that would be different under the Battery Energy Storage Alternative compared to the proposed Stanton project. This alternative does not require substantively new analysis, changes to conclusions, or new or revised mitigation measures for many environmental topic areas.

The battery energy storage alternative would not involve on-site use of fossil fuels for power generation. Given the likely sources to charge the batteries would tend more towards surplus electricity (i.e., excess solar and wind generation) than fossil fuel-based sources, depending upon the time at which the batteries are being recharged, staff concludes that the increased air emissions and associated air quality and public health impacts during operational activities would be less for this alternative than the Stanton project.

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 expansion of the proposed battery energy storage system at Stanton, which uses a series of many individual lithium-ion batteries.

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 the Stanton project. Although noise impacts associated with construction and operation of this alternative would be less than Stanton, mitigation measures may still be required to reduce potential noise impacts to less-than-significant levels.

The comparative scale of expenditures for equipment and labor necessary to construct and operate this alternative is indeterminate. Whatever the estimated expenditures of this alternative, it would generate fiscal benefits that would have a beneficial impact, although the relative benefit compared to Stanton is indeterminate.

NO PROJECT ALTERNATIVE

The Stanton project site is in an area designated Industrial that is partly paved and used for vehicle storage and partly consists of disturbed area that is currently vacant. The site is zoned Industrial General (IG). There are no schools, parks or recreational areas, or other sensitive land uses immediately adjacent to the site.

Under the No Project Alternative, the Energy Commission would not issue a license to the applicant to construct and operate the Stanton project. No action would be taken. Staff assumes that the existing uses would continue at the project site, and the estimated fiscal benefits of the project would not be realized. No other use is predicted to occur at the site in the foreseeable future if the proposed project is not approved; however, additional capacity would need to be obtained elsewhere in the West LA Basin to meet the identified long-term local capacity requirements by 2021. It is uncertain what potential environmental impacts this additional capacity would entail. Therefore, the No Project Alternative is characterized by the continuation of existing conditions at the Stanton site. The No Project Alternative would avoid all of the potential impacts listed on pages 6-4 through 6-5 at the project site.

If the project were not constructed, the applicant's basic project objectives would not be met, and the grid reliability, and environmental and policy benefits from this highly dispatchable and flexible project, would not be realized. Stanton's wide range of operational capabilities offers flexible capacity to support electrical system stability and reliability during periods of rapidly diminishing wind or solar output, and in response to other instances of grid instability. Enhanced stability of the electrical grid would also allow for further integration of renewable resources, providing the state with a path forward toward achieving the 50 percent Renewables Portfolio Standard mandate set forth in Senate Bill 350. Further, the No Project Alternative would not contribute to meeting California's environmental policy goals of encouraging development and deployment of preferred resources, such as the energy storage features of Stanton.

The No Project Alternative could result in greater fuel consumption, air pollution, and other environmental impacts in the state if older, less efficient plants with higher air emissions would continue to generate power instead of being replaced with cleaner, more flexible, and more efficient plants such as the Stanton project.

RESPONSE TO COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT

Staff received no comments from the public, interveners, agencies, applicant, or the Committee in the area of Alternatives.

CONCLUSION

Staff considered a reasonable range of alternatives to the proposed project including three alternative site locations, a battery energy storage alternative, and a no project alternative. As concluded by Energy Commission staff in this FSA, the construction and operation of Stanton is not likely to cause potentially significant adverse impacts with the incorporation of staff's recommended conditions of certification.

Site location alternatives have been eliminated from detailed consideration due to a failure to meet most of the basic project objectives, infeasibility, inability to avoid significant environmental impacts, or any combination thereof.

Staff has identified the Battery Energy Storage Alternative as a potentially feasible alternative that would reduce several of Stanton's environmental impacts (i.e., air quality, public health, noise). Staff has identified no new or unique impacts that would occur under the Battery Energy Storage Alternative and this alternative would not increase the severity of any impact identified under Stanton. While the 100 MW/50 MWh 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, it would not provide an equivalent level of local reliability that the proposed project would.

The No Project Alternative could avoid several environmental impacts relating to construction and operation of the Stanton project. However, greater air pollution could occur in the state if older, less efficient plants with higher air emissions continue to generate power instead of being replaced with cleaner, more flexible and more efficient plants such as the Stanton project. Moreover, the No Project Alternative would not attain the project's basic objectives, and would not provide electrical system benefits, including support for the integration of renewable energy and the deployment of energy storage features. Therefore, the No Project Alternative would not be the environmentally superior alternative. Additionally, the estimated fiscal benefits of the project would not occur under the No Project Alternative.

REFERENCES

CPUC 2013a – California Public Utilities Commission, Decision Authorizing Long-Term Procurement for Local Capacity Requirements; Rulemaking 12-03-014, Filed March 22, 2012; Decision 13-02-015 (Track 1 Decision), Date of Issuance February 13, 2013. Pages 1–11, 72, 73, 124, 125, and 128–131. Available: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M050/K374/50374520.PDF. Accessed December 29, 2017.

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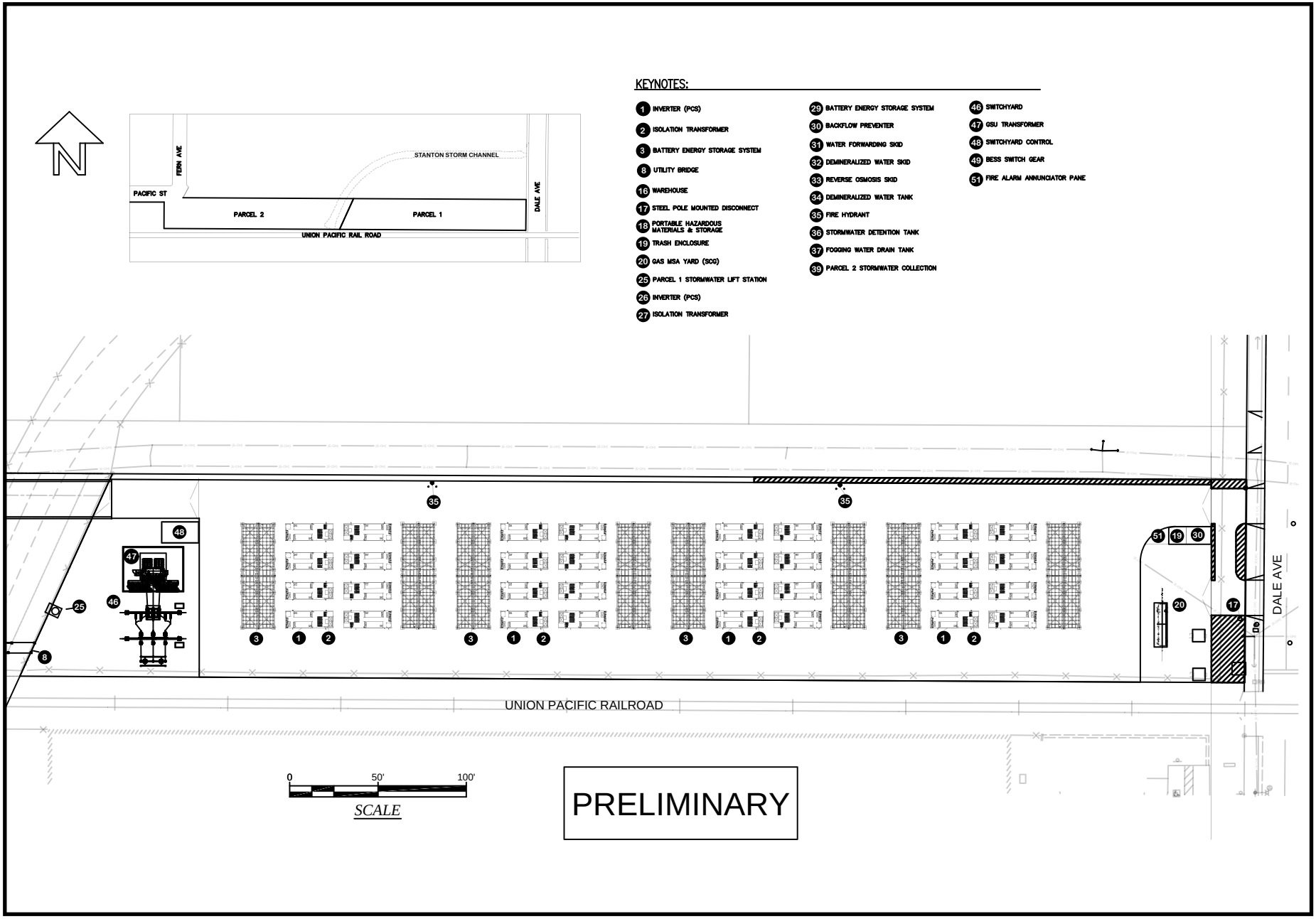
ALTERNATIVES - FIGURE 1

Stanton Energy Reliability Center - Conceptual Site Arrangement for the Battery Energy Storage Alternative



ALTERNATIVES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 2.1-1a & 2.1-1b

Compliance Conditions and Compliance Monitoring Plan

COMPLIANCE CONDITIONS
AND
COMPLIANCE MONITORING PLAN

Mary Dyas

INTRODUCTION

The Stanton Energy Reliability Center (Stanton or project) 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.

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. It 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 1 through 4, 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, and controlled burns; and

3. permanent installation activities for all facility and linear structures, including access roads, fencing, utilities, parking facilities, equipment storage, mitigation and landscaping activities, and other installations, as applicable.

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 re-start 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 Stanton project.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The CPM's compliance monitoring and project oversight responsibilities include:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Decision;

2. resolving complaints;

3. processing post-certification project amendments for changes to the project description, conditions of certification 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 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

Under the California Building Code standards, while monitoring project construction and operation, staff acts as, and has the authority of, the Chief Building Official (CBO). Staff may delegate some or all CBO responsibility to either an independent third-party contractor or a local building official. However, the Energy Commission retains final authority to ensure the project is built accordingly, including the interpretation and enforcement of state and local codes, and the use of discretion, as necessary, in implementing the various codes and standards.

The CBO, or the delegate CBO (DCBO), will be responsible for facilitating compliance with all environmental conditions of certification, including cultural resources, and for the implementation of all appropriate codes, standards, and Energy Commission requirements. The project owner will make payments to the CBO (or DCBO) for CBO services based upon a fee schedule to be negotiated between the project owner and the CBO.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that all conditions of certification and applicable LORS in the Stanton 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 Stanton 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, work with staff to review 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 14 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.

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission Decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are provided in Title 20, California Code of Regulations, section 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 dollar 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 $5,000.00, the total PTA reimbursement fees owed by a project owner will not exceed the maximum filing fee for an AFC, which is $830,336, 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, requiring consideration and approval by the full Energy Commission.

CHANGE OF OWNERSHIP AND/OR OPERATIONAL CONTROL

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full 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 that will not have significant environmental impacts, may be authorized by the CPM as a staff-approved project modification pursuant to section 1769(a)(2). Once the CPM files a notice of determination of the proposed project modifications, any person may file an objection to the CPM's determination within 14 days of service on the grounds that the modification does not meet the criteria of section 1769(a)(2). If there is a valid objection to the CPM's determination, the petition must be processed as a formal amendment to the Decision and must be considered for approval by the full 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 re-start of the facility.

FACILITY CLOSURE

The Energy Commission cannot reasonably foresee all potential circumstances in existence when a facility permanently closes. Therefore, the closure conditions provided herein strive for the flexibility to address circumstances that may exist at some future time. Most importantly, facility closure must be consistent with all applicable Energy Commission conditions of certification and the LORS in effect at that time.

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. 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 1 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 5 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 1 hour of an incident, submit a detailed incident report within 1 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 closing, 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 Final Decision;
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 AFC or amendment processing, 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 showing that the actions required by the verification were satisfied by the project owner or an agent of the project owner. All submittals shall be accompanied by an electronic copy on an electronic storage medium, or by e-mail, as agreed upon by the CPM. If hard copy submittals are required, please address as follows:

Compliance Project Manager
Stanton Energy Reliability Center (16-AFC-01C)
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** 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 e-mail, subject to CPM approval. Each ACR must include the AFC number, identify the reporting period, and contain the following:

1. an updated compliance matrix 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 attachment to the ACR;

4. a cumulative list of all post-certification changes approved by the Energy Commission or the CPM;

5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. a 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 $5,000.00, the total Petition to Amend reimbursement fees owed by a project owner will not exceed $830,336, 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 owner 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, 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 **Noise and Vibration**[1] 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 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;

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;

[1] The CPM needs to cross-check this with the Final Decision.

5. an organizational chart including the name, contact information, and first aid/emergency response certification(s) and renewal date(s) for all personnel regularly on-site;

6. a brief description of reasonably foreseeable, site-specific incidents and accident sequences (on- and off-site), including response procedures and protocols and site security measures to maintain twenty-four-hour site security;

7. procedures for maintaining contingency response capabilities; and

8. the procedures and implementation sequence for the safe and secure shutdown of all non-critical equipment and removal of hazardous materials and waste (see also specific conditions of certification for the technical areas of **Public Health, Waste Management, Hazardous Materials Management, and Worker Safety).**

COM-13 **Incident-Reporting Requirements**. The Energy Commission needs timely and clear information on incidents that have occurred (or are still ongoing) at the project site. Energy Commission staff requires that the project owner notify the CPM within one hour after it is safe and feasible to do so. The list of incidents includes but is not limited to, any of the following:

- Any release of hazardous or non-hazardous materials to the environment that could result in public concerns due to fire, smoke, noise, odor, visual plume or potential health impacts, or one that requires notification to, or emergency response by, any federal, state, or local agency; and,
- The discharge (including accidental) of onsite fixed emergency fire or plume suppression equipment (excluding portable hand held fire extinguishers) for other than routine maintenance, readiness testing, or training; or,
- Any breach of the power plant's physical or cyber security that requires notification to, or emergency response by, any federal, state, or local agency.

Within six business days of an incident, the project owner shall submit to the CPM an incident report that includes, as appropriate and available, the following information:

- Description of the incident, including its date, time, and location;
- Suspected cause of the incident;
- Location of any suspected off-site impacts;
- Federal, state, and local agencies notified;
- Responding agencies;
- Emergency response actions taken;
- Hazardous materials released and estimates of quantities released;

- Suspected injuries, fatalities, or property damage;
- Name, phone number, and e-mail address of a facility contact person(s) having knowledge of the incident; and
- Initial corrective actions.

After the initial 6-day report, the project owner shall start submitting monthly status reports; within 48-hours of a request by the CPM, the project owner shall submit a status report. Status reports shall include the activities already taken, and those currently being taken, to remedy the impacts of the incident. The CPM will determine when reporting is no longer needed. The project owner shall maintain all incident records and reports for the life of the project. A report or a lack of a report would not trigger or preclude staff from investigating incidents at the facilities in the normal course of business.

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 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 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 corrective 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:_____

EMAIL:_____

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: _____

ATTACHMENT A
COMPLAINT REPORT AND RESOLUTION FORM

(ATTACH ADDITIONAL PAGES AND ALL SUPPORTING PHOTO/DOCUMENTATION, AS REQUIRED)

Declarations

&

Resumes

DECLARATION OF
John Heiser

I, John Heiser declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Environmental Protection Office as a Planner III.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepare the staff testimony on the Introduction and Executive Summary, for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/17/18 Signed: John Heiser

At: Sacramento, California

John Heiser
Planner III – Project Manager

E D U C A T I O N

B.A. in Geography, Rural and Small Town Planning, 1990, Chico State University, Chico, CA

M.A. in City and Regional Planning, 2000, Cal Poly, San Luis Obispo, CA

A R E A S O F S P E C I A L I Z A T I O N

Program/Project Management
Renewable Energy Development
Environmental Compliance
Resource Management

John Heiser has experience in the areas of Energy Facility Siting, Municipal Planning and Private Planning Development. Mr. Heiser's skills include project planning management, conducting feasibility studies, economic development, land use and environmental analysis, agency management, plan implementation, policy analysis, grant programs and capital improvement districts. John's planning disciplinary experience includes sustainable energy planning, airport planning, traffic program and transportation planning, housing element updates, zoning ordinance and general plan updates, working with tenant lease agreements with City owned properties, and contract administration.

E M P L O Y M E N T S U M M A R Y

2012 to Date: California Energy Commission, Planner III – Energy Facility Siting

2011-2012: Hauge Brueck Associates, LLC. Planner

2009-2011: Tulare County Resource Management Agency, Planner III

2008-2009: City of Wasco, Community Development Director

2008-2009: JSE Planning Consultants, Owner

2007-2008: City of Isleton, Community Development Director

2006-2008: Willdan, Senior Planner

2005-2006: El Dorado County Community Development, Senior Planner

2004-2005: El Dorado County Department of Transportation, Senior Planner

2001-2004: City of Marina Planning Department, Associate Planner

2000-2001: Santa Barbara County Community Development, Planner III

1998: El Dorado County Community Development, Contract Planner

1992-1997: Modoc County Planning Department, Planner II

1991-1992: Harland Bartholomew and Associates, Planning Intern

1988-1988: QUAD Consultants, Planning Intern

Resume **John Heiser, AICP**

E M P L O Y M E N T

2012 to Date: California Energy Commission, Planner III, Energy Facility Siting – Project Manager. Plan, organize, direct and manage the State regulatory process for electric generating plants from application through issuance of permit. Plan, organize and direct the efforts of 23 disciplinary environmental and engineering staff in actions related to the California Environmental Quality Act (CEQA) requirements. Recommend actions, policies and procedures affecting the project and commission program direction. Conduct public workshops and hearings related to proposed projects. I Compile, edit, and issue staff environmental assessments and other CEQA related documents.

2011-2012: Hauge Brueck Associates, LLC. Associate. Mr. Heiser managed planning and environmental projects related to renewable energy development and other jurisdictional land use entitlement requests. John managed 15 utility scale solar photovoltaic (PV) energy facilities in Tulare County ranging from 20 to 50 Mega Watts in size. Nine of the fifteen solar PV projects have been approved by Tulare County. John was instrumental in creating an entitlement process in Tulare County for these facilities located on agricultural lands and agricultural lands subject to Williamson Act Contracts. This process has assisted other County and City Jurisdictions in California with renewable energy facility sitting issues and entitlement procedures. This entitlement process was recently recognized by the Central Section California Chapter American Planning Association by awarding Tulare County first place for this effort. John was the program manager for Vestal Almond, Vestal Herder and Vestal Fireman Solar PV utility scale projects in Tulare County.

2009-2011: Tulare County. Planner III. Mr. Heiser was engaged in both project review and countywide planning divisions by either providing support to RMA staff and or project managing land use entitlements that require CEQA determination. Prepared CEQA documents, prepare and present staff reports to the Agricultural Advisory Committee, Site Plan Review Committee, Planning Commission and Board of Supervisors. Assisted with county wide planning division on surface mining activities, Williamson Act Contracted lands, County Dairy Team and lead planner on large scale projects. Developed and implemented RMA staff policies and procedures for sitting renewable energy facilities located on agricultural and Williamson Act Contracted lands. John was the project manager for the Tule River Indian Tribe 1 million gallon waste water treatment plant for the Indian reservation. John provided support in the County's updated housing element and General Plan update as well as the Yokohl Ranch development. John was the lead contact person for renewable energy development information for Tulare County, project manage fifteen large scale solar PV facilities located on agricultural lands including project managing the consultants preparing the CEQA documentation for these projects.

2008 – 2009: JSE Consultants: Folsom, CA. Principal-Owner. Owner and Principal of JSE – Consulting Firm located in Folsom, California. JSE was a group of planning, engineering, and building consultants that have vast experience in every level of development, consulting and agency management. They were engaged members of our communities and have held positions as company owners, private builders and developers, and public work directors. The primary purpose of providing Community Development Services was to offer staffing support, assist

jurisdictional (City/County) staff in addressing planning and design issues; process area/community/specific plans, and any other plans as directed by the jurisdiction. Provided environmental documentation services; assist the jurisdiction to identify overall community goals, growth and policies. These services included current and long range planning, development project processing, Environmental compliance and process analysis. As an additional service we offered LEED ND Certification and were familiar with the objectives and credits, as defined by the Green Building Council. It is JSE's mission to incorporate sustainability into its projects.

2006 – 2008: Willdan. Senior Planner. Mr. Heiser provided staff augmentation services for local public planning agencies including acting Community Director for the City of Isleton, California. As Community Development Director for Isleton, duties included but not limited to updating the City's housing element, the City's 5-year redevelopment plan and coordinate efforts with Sacramento LAFCO regarding several annexation proposals in Isleton. Additional efforts included working on three subdivision projects requiring annexation and EIR documents and establishing historical design guidelines for the downtown portion of the City. Facilitated and or conducted community workshops in the City of Isleton regarding development, updated Historical Design Guidelines, Zoning Ordinance and General Plan update and projects identified in the updated 5-year redevelopment plan. While employed with Willdan, additional duties included working with California Department of Parks regarding the Bay Area bike trail to Sacramento proposal, preparing Statements of Qualification, Respond to Requests for Proposals, and assist in marketing. Other responsibilities included project manage a team of assistant and associate planners working on four housing element updates including housing inventories for the City of Woodland, City of Lincoln, City of Isleton and City of Wasco. Present staff reports to Planning Commission, City Council and Redevelopment Agency meetings. Assist and facilitate public workshops, meetings and providing GIS support.

2005 – 2008: El Dorado County Community Development. Senior Planner. Responsibilities included review and processing land use entitlements subject to CEQA review and documentation. Process tentative and final subdivision maps subject to CEQA documentation; assisted in developing a screening process for land use entitlement requests that required General Plan consistency analysis. Facilitate meetings with applicants and staff and present staff report to the planning commission. Assist the County's Planning Department in regards to siting Wireless Telecommunication Facilities and review projects that required General Plan findings of consistency, Additional duties included overseeing and providing management support for the County's satellite office located in El Dorado Hills California.

2004 – 2005: El Dorado County Department of Transportation. Senior Planner. Duties Performed: Working on updating the County's traffic impact/Capital Improvement Program, coordinate with Fehr & Peers on traffic modeling as part of this program and Muni-Financial regarding the costs and financial obligations required in upgrading the County and State Highway road infrastructure systems in El Dorado County. Assist EDC-DOT with storm water permitting requirements and assist with facilitating meetings with the traffic impact fee committee.

Resume **John Heiser, AICP**

2001 – 2004: City of Marina. Associate Planner. Responsibilities included project planner/manager working on several redevelopment projects, subdivisions, housing and mixed use developments located on former Fort Ord Military Base and Airport and within the City limits. These projects required coordinated efforts between local, state and federal agencies as well as the Fort Ord Reuse Authority, the County's airport committee and both California State and University of California. Process and approve land use entitlement requests requiring CEQA documentation. Project planner/manager for the City's Pedestrian and Bicycle Master Plan and assisted with the updated Downtown Specific Plan. Update the City's entire Zoning Ordinance including the Airport, Zoning maps and policy sections of the updated General Plan. Created the City's Wireless Telecommunication Ordinance and Village Homes-Mixed Use Zoning Ordinance. Project manager updating the City's Airport Design Guidelines and facilitate lease agreements at the City's Airport and on former Fort Ord. Assist the public counter section of current planning, facilitate the architectural review committee meetings and provide GIS mapping support.

2000 – 2001: Santa Barbara. Planner III. Project manager of subdivision application requests and multi-family dwellings located on environmentally constrained parcels, process wireless telecommunication facilities throughout the County, review and process complex discretionary projects requiring CEQA documentation. Manage and administer consultant contracts and assist the public counter section of current planning.

1999 – 1999: Max P. Bacerra & Associates. Contract Planner. Project manager of two housing surveys and housing element update documents for the City of Arvin and McFarland. Project manage a 5-year Redevelopment Plan and assist with block grant proposals.

1998 – 1998: El Dorado County. Contract Planner. Responsibilities included but not limited to assisting the public counter section of current planning and plan checking both residential and commercial projects for Zoning, Specific Plan and General Plan policy consistency.

1992 – 1997: Modoc County. Planner II. Project planner/manager for current and long range planning projects. Work efforts included updating the County's Zoning Ordinance and General Plan, Housing Element and providing planning staff services for the City of Alturas. Provide Code Enforcement services for both the County and City of Alturas. Develop a recreational trails map and guide for the County. Prepared for the City of Alturas a Historical Design Guidelines document. Process land use entitlements requiring CEQA review and documentation such as subdivisions and surface mines subject to SMARA and State requirements. Prepare and present staff reports to the City Planning Commission and City Council along with presenting staff reports to the County Planning Commission and Board of Supervisors. Assist the public counter section of current planning. Provide code enforcement assistance and project manage the County's new E-911 addressing system.

1991 – 1992: El Dorado County. Associate Planner. Responsibilities included but not limited to assisting the public counter section of current planning and plan checking both residential and commercial projects for Zoning, Specific Plan and General Plan policy consistency.

1991 – 1992: El Dorado County. Building Technician I. Assist the public counter section of the building department, review and plan check building permit applications.

1991 – 1992: Harland Bartholomew and Associates. Intern Planner. Assist with data collection for CEQA documents and General Plans.

1988 – 1988: QUAD Consultants. Intern Planner. Assist with data collection for CEQA documents by collecting field data and or research data collection.

P R O J E C T S

Public Outreach and Consent Building

Modoc County, CA
Modoc County, General Plan update, 1995
Modoc County, Surface Mining Projects, 1990
City of Alturas, CA
City of Alturas, Downtown Historic Design Guidelines, 1995.

City of Marina, CA
City of Marina, Downtown Specific Plan, 2003-2004
City of Marina, Pedestrian and Bicycle Master Plan, 2003-2004.
City of Marina, Redevelopment Projects located on former Fort Ord Military Base, 2001 – 2004.
City of Marina, 350 acre "Marina Heights" mixed use development. 2003-2004
City of Marina 300 acre "Marina Station" mixed use – TOD subdivision, 2003-2004.

El Dorado County, CA
El Dorado County, Department of Transportation, Traffic Impact Fee Committee, 2004 – 2005.

City of Isleton, CA
City of Isleton, Annexation requests for subdivisions and commercial mixed use housing projects, 2005-2006.
City of Isleton, Housing Element update, 2005-2006.
City of Isleton, Downtown Historic Development Guidelines, 2006.
City of Isleton, Bicycle and Pedestrian Plan workshops, 2006.

City of Wasco, CA
City of Wasco, Downtown Historic Design Guidelines update, 2009.
City of Wasco, Climate Change and Project Blue Print workshops. 2008-2009.

Tulare County, CA
Tulare County, Solar PV Facility siting criteria stakeholder meetings. 2010- 2011.

Community And Regional Planning

Modoc County, CA
Modoc County Housing Element update, 1995
Modoc County Zoning Ordinance Update, 1992
Modoc County General Plan Element Updates, 1994.
City of Alturas, CA
City of Alturas Historic Design Guidelines, 1995.

City of Marina, CA
City of Marina, Pedestrian and Bicycle Master Plan, 2004.
City of Marina, Downtown Specific Plan, 2003-2004.
City of Marina, Wireless Telecommunication Ordinance, 2004.
City of Marina, updated Airport Design

Guidelines, 2004.
City of Marina, updated Zoning Ordinance and Zoning Map, 2005.
City of Marina, Village Homes/TND based zoning Ordinance.

City of Isleton, CA
City of Isleton, updated Downtown Historic Design Guidelines, 2008.
City of Isleton, updated 5-year redevelopment plan. 2007-2008.

Tulare County, CA
Tulare County, siting criteria for utility scale Solar PV electrical generating facilities. 2010

Regulation Development

Modoc County, CA
Modoc County Housing Element update, 1995
Modoc County Zoning Ordinance Update, 1992
Modoc County General Plan Element Updates, 1994.

Site Planning

Modoc County, CA
Modoc County, General Plan update, 1995
Modoc County Housing Element update, 1995
Modoc County Zoning Ordinance Update, 1992
Modoc County General Plan Element Updates, 1994.

City of Marina, CA
City of Marina, Pedestrian and Bicycle Master Plan, 2003-2004.
City of Marina, Pedestrian and Bicycle Master Plan, 2004.
City of Marina, Downtown Specific Plan, 2003-2004.
City of Marina, Wireless Telecommunication Ordinance, 2004.

City of Alturas, CA
City of Alturas Historic Design Guidelines, 1995.
City of Marina, Pedestrian and Bicycle Master Plan, 2004.

City of Marina, CA
City of Marina, Downtown Specific Plan, 2003-2004.
City of Marina, Wireless Telecommunication Ordinance, 2004.
City of Marina, updated Airport Design Guidelines, 2004.
City of Marina, updated Zoning Ordinance and Zoning Map, 2005.
City of Marina, Village Homes/TND based zoning Ordinance.

City of Isleton, CA
City of Isleton, updated Downtown Historic Design Guidelines, 2008.
City of Isleton, updated 5-year redevelopment plan. 2007-2008.

Tulare County, CA
Tulare County, siting criteria for utility scale Solar PV electrical generating facilities. 2010

City of Marina, updated Airport Design Guidelines, 2004.
City of Marina, updated Zoning Ordinance and Zoning Map, 2005.
City of Marina, Village Homes/TND based zoning Ordinance.
City of Marina, Downtown Specific Plan, 2003-2004

City of Alturas. CA
Downtown Historic Design Guidelines, 1995.
Historic Design Guidelines, 1995.

City of Isleton, CA
City of Isleton, Housing Element update, 2005-2006.
City of Isleton, Downtown Historic Development Guidelines, 2006.
City of Isleton, updated Downtown Historic Design Guidelines, 2008.

City of Isleton, updated 5-year redevelopment plan. 2007-2008.

City of Wasco, CA
City of Wasco, Downtown Historic Design Guidelines update, 2009.

Tulare County, CA
Tulare County, siting criteria for utility scale Solar PV electrical generating facilities. 2010

T r a n s p o r t a t i o n P l a n n i n g

City of Marina, CA
City of Marina, Pedestrian and Bicycle Master Plan, 2003-2004.

El Dorado County, CA
El Dorado County Development Fee Impact Study for County and State Highway Infrastructure Improvements, 2004-2005

M E M B E R S H I P S, R E G I S T R A T I O N S, A N D C E R T I F I C A T E S

American Institute for Certified Planners (AICP)
American Planning Associations (APA)

A W A R D S

American Planning Association, California Chapter, Central Section, Award for "Innovation in Green Community Planning - first place: Tulare County Resource Management Agency Solar Facility Review Process," 2011

Transportation Agency Monterey County, Award for the City of Marina Pedestrian and Bicycle Master Plan, 2004

DECLARATION OF
TAO JIANG, Ph.D., P.E.

I, Tao Jiang, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as an Air Resources Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Air Quality** and **Traffic and Transportation APPENDIX TT-2** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 05/17/18

Signed: Tao Jiang

At: Sacramento, California

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

Professional Experience

Air Resources Engineer ***(Jan. 2009 – Present)***

California Energy Commission, Siting Transmission and Environmental Protection Division

Act as air quality technical lead on power plant siting projects and related linear facilities, including Abengoa Mojave Solar, Ridgecrest Solar Millennium, Almond 2 Power Plant, Pio Pico Energy Center, Huntington Beach Energy Project, Sonoran Energy Project, Pomona Repower Project and Stanton Reliability Energy Center. Also be responsible for compliance work of 26 power plants in construction and operation. Specific responsibilities include the following:

- Analyze the impacts of the construction and operation of large power generation projects and related linear facilities on air quality, Green House Gas and climate change
- Determine the conformance to applicable U.S. EPA, CARB and local air district regulations and standards
- Investigate and recommend appropriate emission mitigation measures
- Prepare air quality staff assessments and technical testimony
- Develop and monitor air quality compliance plans
- Review and evaluate U.S. EPA, CARB, and local air district air quality rules and regulations
- Collect, analyze and evaluate data for the effects of air pollutants and power plant emissions on human health, vegetation, wildlife, water resources and the environment
- Develop, recommend, and implement statewide planning and policy initiatives for the Energy Commission and Governor

Research assistant ***(Sep. 2004 – Dec. 2008)***

University of California, Riverside, Chemical & Environmental Engineering

- Investigated phase behavior of colloidal particles
- Study mediated colloidal interactions in the particle dispersions
- Build and evaluate models for gas molecules and particulate matters
- Conduct computer simulation and modeling for gas molecules and particulate matters

Education

PhD	Chemical & Environmental Engineering, University of California, Riverside (August, 2008)
ME	Materials Science and Engineering, Beijing University of Chemical Technology (June, 2003)
BE	Materials Science and Engineering, Beijing University of Chemical Technology (June, 2000)

DECLARATION OF

Dave Vidaver, Electric Generation System Program Specialist II

I, Dave Vidaver, declare as follows:

1. I am presently employed by the California Energy Commission in the Supply Analysis Office of the Energy Assessments Division as an Electric Generation System Program Specialist II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Air Quality and Alternatives for the Stanton Energy Reliability Center based on my independent analysis of the project and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 25, 2018 Signed: Dave Vidaver

At: Sacramento, California

Dave Vidaver
Electricity Analysis Office
Energy Assessments Division
California Energy Commission
(916) 654-4656
david.vidaver@energy. ca.gov

Employment (all with the California Energy Commission)

Electric Generation System Program Specialist II, Electricity Analysis Office 2011 – present

> Senior analyst responsible for evaluation of procurement, resource adequacy and renewable generation development policies, potential impacts of generation resource development on greenhouse gas emissions.

Electric Generation System Specialist III, Electricity Analysis Office, 2005 - 2011

> Supervisor of Procurement and Resource Adequacy Unit, supervise nine staff responsible for evaluating utility procurement and resource adequacy, combined heat and power and distributed generation issues, role of aging and once-through cooled power plants, compiling and maintaining office databases.

Energy Commission Specialist II, Demand Analysis Office, 2005

> Monitoring near-term load growth at utility and regional level across the WECC; assessing load-temperature relationships for California and major western utilities and long-term changes in temperatures and load-temperature relationships.

Electric Generation System Specialist II, Electricity Analysis Office 2002 – 2005

> Supervisor of Electricity System Modeling Unit; supervised four staff responsible for studies of resource adequacy, market price forecasts, emissions and fuel use studies, assessments of market conditions, role of aging power plants; contributing and principal author of numerous reports, papers, and presentations,

Electric Generation System Specialist I, Electricity Analysis Office, 1998 – 2002

> Simulation modeling of WECC for studies of resource adequacy, market price forecasts, emissions and fuel use studies; assessments of market conditions; contributing and principal author of numerous papers, reports and presentations.

Education

BA, Political Science, University of California, Berkeley
MS, Agricultural Economics, University of California, Davis

Additional Information

Member of the Northwest Power and Conservation Council's Generation Resource Committee, which characterizes the cost and performance of generation technologies for studies undertaken in support of the Council's 5-year power plans; numerous reports at conferences and symposia on topics ranging from natural gas demand in California's electricity sector to implementation of resource adequacy measures in California during 2001- 2004; participant in collaborative proceedings with CPUC (resource adequacy, long-term procurement)

DECLARATION OF
Ann Crisp

I, Ann Crisp, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Siting, Transmission and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony **on Biological Resources** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/16/18

Signed: Ann Crisp

At: Sacramento, California

CALIFORNIA
ENERGY COMMISSION

ANN CRISP
STAFF BIOLOGIST /PLANNER II

Education, Certification & Associations

- Associate of Arts Degree, Natural Science, College of Marin (1998)
- Bachelor of Science Degree, Wildlife, Fish and Conservation Biology, University of California, Davis (2004)

Experience

California Energy Commission (CEC) – from 3/2010 to Present

Planner II – Staff Biologist

As a staff biologist with the Energy Commission, Ms. Crisp analyzes the biological resource components of energy facilities siting applications to assess resource impacts, develop mitigation, and to evaluate compliance with applicable local, state, and federal laws, ordinances, regulations, and standards. This requires working closely with biological resource protection and management agencies, subject matter experts, and Energy Commission consultants as well as with other Energy Commission staff to ensure the best available information is included in staff analyses.

Robertson-Bryan, Inc. – from 11/2006 to 3/2010

Staff Biologist

Ms. Crisp's duties with Robertson-Bryan, Inc. included development of technical study reports and presentations based on the conclusions of field studies for the Middle Fork American River Project (MFP) Integrated Licensing Process for the Placer County Water Agency. She conducted field studies in preparation of the biological resources component of the MFP and the Big Creek System Alternative Licensing Process for Southern California Edison Company (SCE) including wildlife reconnaissance surveys, protocol-level wildlife surveys (including bald eagle wintering and nesting surveys and California red-legged frog surveys) and botanical surveys (including special-status plant species, noxious weeds, and plants of cultural concern for Native Americans). Ms. Crisp prepared documents supporting various management plans as part of the Big Creek No. 4 Traditional Licensing Process for SCE, including yearly monitoring reports for the Sediment Management Plan, Noxious Weed Management Plan, and Valley Elderberry Longhorn Beetle Management Plan. She also prepared and reviewed technical reports and California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) chapters on terrestrial resources.

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Pacific States Marine Fisheries Commission/ California Department of Fish and Game – from 3/2006 to 11/2006

Research Technician

While working with the California Department of Fish and Game through a partnership with the Pacific States Marine Fisheries Commission, Ms. Crisp conducted various focused wildlife surveys including reptile and amphibian cover board surveys, small mammal mark-recapture surveys, burrowing owl nest surveys, and California tiger salamander larval surveys. She collaborated on design and execution vegetation sampling protocol at multiple survey areas.

California Department of Fish and Game – from 11/2005 to 1/2006

Scientific Aide

Ms. Crisp led tours of the Nimbus Fish Hatchery to provide information on the function of the hatchery and fish biology to school groups and the general public.

Humboldt State Foundation / California Department of Fish and Game – from 3/2005 to 10/2005

Wildlife Research Assistant

While working with the California Department of Fish and Game (CDFG) through a partnership with the Humboldt State Foundation, Ms. Crisp conducted field-based vegetation sampling to classify vegetation types/wildlife habitats on multiple CDFG Wildlife Areas and Ecological Reserves. She was responsible for data management and preparation for inclusion in a statewide database. Ms. Crisp also conducted focused wildlife surveys including reptile and amphibian cover board surveys, small mammal live-trapping surveys, and nocturnal mammal spotlight surveys.

Oregon State University – from 6/2004 to 9/2004

Research Technician

Ms. Crisp conducted bat surveys and vegetation inventories and assessments on a bat survey crew in western Oregon. This included collecting data on bat activity using Anabat II detectors, capturing bats using mist nets and H-nets and collecting biological samples and morphological data and vegetation sampling.

Sacramento Regional County Sanitation District – Bufferlands – from 7/2003 to 3/2004

Senior Student Intern

Ms. Crisp assisted with various habitat restoration and management projects within the 2,650-acres surrounding the Sacramento Regional Wastewater Treatment Plant. She conducted waterfowl and shorebird surveys as well as sensitive species surveys. Other duties included landscape maintenance and water quality monitoring.

DECLARATION OF
Tia Mia Taylor

I, Tia Mia Taylor, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Siting, Transmission and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared portions of the staff testimony **on Biological Resources** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 18, 2018 Signed: <TIA MIA TAYLOR>

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

TIA MIA TAYLOR
STAFF BIOLOGIST/ PLANNER I

Education, Certification & Associations

- Bachelor of Science, Environmental & Resource Science, University of California Davis (2010)
- Associate of Science, Mathematics & Physical Science, American River College, (2007)

Experience

California Energy Commission (CEC) – from 2015 to Present

Staff Biologist

Under Warren-Alquist Act, Ms. Taylor reviews applications to permit and build new thermal power plants throughout California, and performs California Environmental Quality Act (CEQA) equivalent analyses to assess effects on biological resources. Ms. Taylor serves as an in-house expert in project approval, construction and compliance monitoring on projects ranging in scale from 50 megawatts (MW) to 1,100 MW in generating capacity. Her work includes establishing and maintaining relationships with colleagues at other government agencies such as California Department of Fish and Wildlife (CDFW), US Fish and Wildlife Service (USFWS), US Army Corps of Engineers (USACE) and coordinating with these contacts to make sure power plants are in compliance with CDFW 1600 and 2081 permits, USFWS Section 7 consultations and Section 10 permits, and Clean Water Act 404 permits and 401 certifications.

Select Projects

Palmdale Power Plant - Palmdale, San Bernardino County, CA. Served as lead author of the biological resources analysis for a petition to amend the original CEC license for a 645 MW power generation facility. Ms. Taylor was responsible for coordinating the biological resources review with outside agencies including CDFW and USFWS, and completing a complex review and mitigation plan for potential take resulting from the project of southwestern willow flycatcher based upon new evidence for the species not known at the time of the original Decision. In addition, during the review of the amended project Ms. Taylor recognized inadvertent errors which were overlooked in the original Decision's computation of required mitigation acres for the Mohave ground squirrel and Swainson's hawk. The correction of these errors for the amended project resulted in an additional 10 mitigation acres required for Mohave ground squirrel and 61 mitigation acres required for Swainson's hawk. In order to accurately determine the total amount of acres of each vegetation community permanently lost Ms. Taylor created an ArcGIS map comparing the original project to the amended project which was published in the Final Staff Assessment.

Alamitos Energy Center – Long Beach, Los Angeles County, CA. Ms. Taylor was a contributing author in writing the biological resource section of the CEC license, which included analysis of the application for certification provided by the project owner. Ms. Taylor serves as lead for the biological resources mitigation monitoring and compliance activities for this 1,040 MW gas-fired generating facility currently in the middle stages of construction. In this role her responsibilities include monthly assessment of compliance with project conditions of approval pertaining to plant and wildlife avoidance and conservation, coordinating with the owner's

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biological experts to resolve issues requiring attention at the site, and conducting regular field visits to assess implementation of and adherence to project mitigation measures. Most recently she is working with the CDFW and the Designated Biologist onsite to adjust current best practices concerning the protection and monitoring of the burrowing owl due to the project site now being recognized as burrowing owl habitat.

Huntington Beach Energy Center (HBEP) – Huntington Beach, Orange County, CA. The HBEP is a 844 MW gas-fired power facility currently under construction within an existing power plant site proximate CA Highway 1 and the State Beach. In addition to her compliance and monitoring responsibilities for the new construction as lead biologist for this facility, she serves as the lead on CEC coordination, review and approval of activities and an annual budget on the adjacent Huntington Beach Wetlands Conservancy, a restoration project required as mitigation for the original facility. Ms. Taylor conducts monthly review of monitoring reports and activities and participates in construction site visits to confirm adherence to the project Biological Resources Mitigation Implementation and Monitoring Plan. Most recently she is working with the CDFW and the Designated Biologist onsite to adjust current best practices concerning the protection and monitoring of the burrowing owl due to the project site now being recognized as burrowing owl habitat.

Stanton Energy Reliability Center – Stanton, Orange County, CA.

Ms. Taylor was a contributing author of the Preliminary Staff Assessment for the submitted application to build this 98 MW facility consisting of two Hybrid EGT™ General Electric LM6000-based Electric Gas Turbines and a 10-megawatt integrated battery storage component. Ms. Taylor attended the initial site visit and public hearing for support or opposition of the power plant by community members in Stanton, CA. She continues to assist in reviewing and editing documents pertaining to the CEC licensing process.

McLaren Advantage Data Center – Santa Clara, Santa Clara County, CA.

Ms. Taylor is a contributing author for the process of completing an Initial Study and Mitigated Negative Declaration for this 98.7MW facility comprised of multiple diesel back-up generators that qualifies for the Small Power Plant Exemption (SPPE) with the CEC since it will produce less than 100MW in energy. This includes responsibilities of analyzing, reviewing, writing and editing documents pertaining to this CEC SPPE process.

DECLARATION OF
MELISSA MOURKAS

I, Melissa Mourkas, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection Office of the Siting, Transmission, and Environmental Protection Division as a Planner II.

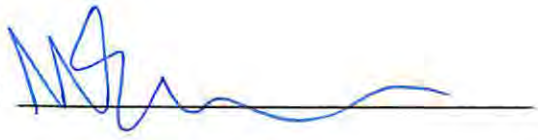
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I am sponsoring the staff testimony prepared primarily by others on Cultural Resources (built environment resources) for the Stanton Energy Reliability Center and agree with the conclusions of others based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 15, 2018 Signed: 

At: Sacramento, California

MELISSA MOURKAS

EDUCATION

MASTER OF ARTS, LANDSCAPE DESIGN & PLANNING, 1994
CONWAY SCHOOL OF LANDSCAPE DESIGN, CONWAY, MASSACHUSETTS

Graduate landscape design program providing professional training in site design and land-use planning. Curriculum emphasis is on sustainable landscape planning and design. Graduate projects included: Master Plan for a 45-acre historic resort, original landscape designed by F.L. Olmsted and Performance Standards for a proposed industrial park.

BACHELOR OF ARTS, HISTORY OF ARCHITECTURE & ART, 1981
SCRIPPS COLLEGE, CLAREMONT, CALIFORNIA

Major studies in Art and Architectural History, Urban Development. Senior thesis: documentation and analysis of the innovative residential designs and construction techniques of California modern architect Rudolf M. Schindler. Minor studies in Art and the Humanities.

PROFESSIONAL EXPERIENCE/QUALIFICATIONS

- Licensed Landscape Architect, California # 5139
- Qualified Architectural Historian, Secretary of the Interior's Standards for Historic Preservation, Code of Federal Regulations, 36 CFR Part 61.

PLANNING AND HISTORIC PRESERVATION:

April 2010 to Present: Planner II, California Energy Commission, Siting, Transmission and Environmental Protection Division. Provide technical environmental analysis of proposed energy facilities and development. Review of EIR/EIS documents prepared by other agencies under NEPA. Specific tasks include: the assessment of potential impacts of new electric power plants on both Visual and Cultural Resources; identification of suitable mitigation measures under CEQA; preparation of written testimony; participation in public workshops; presentation of sworn testimony during evidentiary hearings, and project monitoring to ensure compliance with local, state and federal environmental laws and regulations. Cultural Resources specialty in the built environment, architectural and landscape history. Section 106 review of federally-funded energy efficiency upgrades under Programmatic Agreement with California OHP.

2008-2014: Member, City of Sacramento Preservation Commission (Chair 2013-2014)

2005 to 2008: Assistant Planner, Historic Preservation Office, City of Sacramento, CA
Responsible for design review and approval for private and public development projects involving rehabilitation, preservation and restoration of historic resources and districts under CEQA. Prepared staff reports for Preservation Commission and Council, and coordinated with other planning staff on concurrent entitlements. Staff liaison on municipal development projects involving historic resources.

LANDSCAPE ARCHITECTURE:

1994 to Present: Landscape Architecture and Design. Experience in landscape architecture, landscape construction estimating, site planning, historic landscapes and landscape master plans. Provide landscape architecture and consulting services to private clients, public organizations, contractors, and design firms. Preparation of Cultural Landscape Reports. Frequent speaker to various groups on landscape design, construction and cultural landscapes.

DECLARATION OF MATTHEW BRAUN

I, Matthew Braun, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Protection Office of the Siting, Transmission, and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I am sponsoring the staff testimony on Cultural Resources (archaeology and ethnography) for the Stanton Energy Reliability Center and agree with the conclusions based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/21/18 Signed: Matthew Braun

At: Sacramento, California

MATTHEW BRAUN

Cultural Resources Specialist

Academic Background

MA, Anthropology (Archaeology), Northern Illinois University
BS, Anthropology and Psychology, University of Pittsburgh

Professional Experience

Mr. Braun is a Secretary of the Interior qualified prehistoric archaeologist and cultural anthropologist. He has over 9 years of experience conducting archaeological field work, consulting with Native American groups, researching, analyzing, and writing about Native American concerns, archaeology, ethnohistory, anthropology, cultural and ethnographic landscapes and paleontology. Mr. Braun has experience preparing cultural resources technical reports and environmental documents pursuant to applicable federal, state and local regulations in compliance with the National Environmental Policy Act (NEPA), Section 106 and 110 of the National Historic Preservation Act (NHPA), and the California Environmental Quality Act (CEQA).

California Energy Commission……2014-present

The California Energy Commission is the State Agency responsible for licensing energy facilities 50 megawatt and greater and environmental review is conducted under a CEQA-equivalent Certified Regulatory Program. As a Planner II, Mr. Braun provides independent analyses of prehistoric and ethnographic resources for proposed energy facilities throughout California by conducting fieldwork, report writing, and critical analysis of Applicant proposed impacts and mitigation measures. As a cultural resources analyst with the Energy Commission, Mr. Braun participated in the following projects:

- **Alamitos Generating Station.** Mr. Braun conducted analyses of impacts to ethnographic resources for this natural gas-fired power plant in Long Beach, California.
- **Carlsbad Energy Center Project.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources for this natural-gas fired power plant in Carlsbad, California.
- **Argus Cogeneration Project.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources from the decommissioning of this coal-fired powered plant in Trona, California.
- **Gateway Generating Station Power Project.** Mr. Braun oversaw portions of the compliance efforts of this natural gas-fired power plant in Antioch, California.
- **Puente Power Proejct.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources for this natural-gas fired power plant in Oxnard, California.
- **Mission Rock Energy Center.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources for this natural-gas fired power plant in Santa Paula, California.
- **Desert Renewable Energy Conservation Plan.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources for this planning document for renewable energy in the California Desert.
- **Palmdale Energy Project.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources for this natural-gas fired power plant in Palmdale, California.
- **Pomona Repower Project.** Mr. Braun conducted analyses of impacts to ethnographic and archaeological resources for this natural-gas fired power plant in Pomona, California.

Aspen Environmental Group……2012-2014

California Energy Commission. Under contract with the CEC as an employee of Aspen, Mr. Braun participated in the following projects:

- **Rio Mesa Solar Electric Generating Facility, Cultural Resources Staff Assessment (2012-2013).** Mr. Braun conducted analyses of impacts to archaeological resources, ethnographic resources and ethnographic landscapes through fieldwork, archival research and interviews with local Native American tribal representatives from the area near the 3,960 acre 500 MW solar concentrating thermal plant located on the Palo Verde Mesa near Blythe, California. Important resource issues included impacts to trail systems, prehistoric archaeological sites, plant and animal resources, and other elements that are part of a Native American tribe's ethnographic landscape. This was a large, complex project, coordinated with other solar projects and with Native American representatives from the Fort Mojave Tribe, the Chemehuevi Tribe, the Colorado River Indian Tribes, the Agua Caliente Band of Cahuilla Indians, and the Fort Yuma Quechan Tribe.

- **Hydrogen Energy California, Cultural Resources Staff Assessment (HECA) (2012-present).** Mr. Braun conducted analyses of impacts to ethnographic resources and ethnographic landscapes through consultation with local Native American Tribal representatives and archival research of the area near the 453 acre 400 MW Integrated Gasification Combined Cycle (IGCC) power plant and associated linear facilities. Important resources include known and unknown burials, traditional gathering and hunting areas, and other ethnographic resources. This project was coordinated with the Department of Energy and Native American representatives from the Tejon Indian Tribe and the Tubatalabals of Kern County.

- **Palen Solar Electric Generating Facility, Cultural Resources Staff Assessment (2013).** Mr. Braun is conducting analyses of impacts to ethnographic resources through fieldwork, archival research and interviews with Native American tribal representatives from the area near the 3,794 acre concentrating solar thermal plant located near Desert Center, California. He is the lead author of the ethnographic technical report, and co-author to the Staff Assessment issued by the CEC. Important resource issues include impacts to cultural landscapes, components of which include trail systems, archaeological sites, plant and animal resources, rock art and earth figures, among intangible spiritual and religious values. This is a large, complex project coordinated with other solar projects and with Native American representatives from the Chemehuevi Tribe, Colorado River Indian Tribes, Fort Mojave Tribe, Fort Yuma Quechan Tribe, Cocopah Indian Tribe, Morongo Band of Cahuilla Indians, San Manuel Band of Mission Indians, Agua Caliente Band of Cahuilla Indians, Cabazon Band of Mission Indians, and Soboba Band of Luiseño Indians.

- **Desert Renewable Energy Conservation Plan, southern CA desert (DRECP) (2013-present)**. The goal of this planning project is to generate an efficient and effective biological mitigation and conservation program providing renewable project developers with permit timing and cost certainty under the federal and California Endangered Species Acts while at the same time preserving, restoring and enhancing natural communities and related ecosystems. The DRECP Plan Area consists of approximately 22.5 million acres of federal and non-federal California desert land in Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego counties. Mr. Braun is an author of the Cultural Resources and Tribal Interest chapters of the associated EIR/EIS (BLM and CEC lead agencies).

- **Genesis Solar Energy Project, Cultural Resources Compliance (2010-2014).** Mr. Braun reviewed all of the licensees' submittals and actions related to compliance with cultural resources conditions of certification and providing recommendations to staff regarding acceptability. The GSEP is a large, complex project for which cultural resources compliance review has been coordinated with other

solar projects, with BLM as the federal lead agency, and with local Native American tribal representatives. This effort included reviewing more than 3100 daily monitoring logs, 30 monthly compliance reports, and more than 950 DPR forms associated with the collection of more than 2700 artifacts.

Western Power Administration, Desert Southwest Region. Under contract with WAPA as an employee of Aspen, Mr. Braun participated in the following project:

- **Parker-Blythe Transmission Line 1 & 2, Cultural Resources Survey (2014).** Mr. Braun co-led an archaeological field crew in re-recording 56 archaeological sites, and providing recommendations concerning the NRHP eligibility of these resources. Important resources included trails, lithic scatters, petroglyphs, intaglios, ceramics, and cleared circles. The transmission line is located on land managed by the Colorado River Indian Tribes, several different BLM field offices, and the BOR, and this project required coordination for permits and fieldwork.

Other California projects

- **Renewable Energy General Plan Amendment, Opportunities and Constraints Study (2013-present).** Inyo County is proposing to amend their General Plan to designate some lands for renewable energy development. As part of this amendment, an Opportunities and Constraints Technical Study was conducted to identify areas of the County that would be less likely to impact cultural resources. Mr. Braun worked closely with GIS specialists to construct cultural resources sensitivity maps to identify those less sensitive areas.
- **California Valley Solar Ranch, Cultural and Paleontological Resources Compliance (2012-2013).** The CVSR project is a 250 MW solar photovoltaic power plant on the Carrizo Plain in rural San Luis Obispo County. The solar arrays for the project will cover nearly 2,000 acres. Mr. Braun served as an assistant technical reviewer for cultural resources and paleontology during the compliance process. Duties included the review of licensees' submittals and actions related to compliance with cultural resources and paleontological conditions of approval and providing recommendations to San Luis Obispo County regarding acceptability.
- **Renewable Energy General Plan Amendment, Opportunities and Constraints Study (2013-present).** San Luis Obispo County is proposing to amend their General Plan to designate some lands for renewable energy development. As part of this amendment, an Opportunities and Constraints Technical Study was conducted to identify areas of the County that would be less likely to impact cultural resources. Mr. Braun worked closely with GIS specialists to construct cultural resources sensitivity maps to identify those less sensitive areas.
- **Santa Margarita Quarry Expansion Project, Environmental Impact Report (2013-present).** The Santa Margarita Quarry is an aggregate quarry along the Salinas River in San Luis Obispo County, and is proposing to expand existing operations by approximately 50 acres and is applying for a Conditional Use Permit to expand. A Reclamation Plan is also being proposed, and Mr. Braun is authoring the corresponding cultural and paleontological resources EIR section and conducting Native American outreach with those groups interested in the project.
- **Donnell Basin Flood Control Project, Initial Study and Mitigated Negative Declaration (2013).** Mr. Braun conducted archaeological survey of the 65 acre Donnell Basin and co-authored the technical report. Donnell Basin is an area proposed by the San Bernardino Flood Control District to be used for overflow in the Twenty-nine Palms area. Important resource issues included a prehistoric quarry and built-environment resources.

- **Mission Channel and Zanja Creek Routine Maintenance Project, Technical Report and Mitigated Negative Declaration (2014-present).** Under contract with the Department of Public Works, Flood Control District Mr. Braun conducted a cultural resources record search, and is the co-author a technical report and IS/MND sections associated with vegetation management, channel shaping, slope repairs and sediment removal along approximately 8 miles of the Mission Channel/Zanja Creek in Redlands, CA. The Mission Channel/Zanja Creek was built in 1819 and is listed on the National Register of Historic Places.
- **Costa Photovoltaic Solar Energy Facility, Cultural Resources Reconnaissance Survey and Technical Report (2013).** Mr. Braun conducted a cultural resources reconnaissance survey and co-authored a technical report in support of a CEQA review and preparation of an Initial Study for a proposed 170 acres solar energy facility on private land in Kings County, California. Cultural resources identified and evaluated include segments of an historic irrigation canal.
- **Gales Photovoltaic Solar Energy Facility, Cultural Resources Reconnaissance Survey and Technical Report (2013).** Mr. Braun conducted a cultural resources reconnaissance survey and co-authored a technical report in support of a CEQA review and preparation of an Initial Study for a proposed 20 acre solar energy facility on private land in Kings County, California. Cultural resources identified and evaluated include segments of two historic irrigation canals.
- **Venable Photovoltaic Solar Energy Facility, Cultural Resources Reconnaissance Survey and Technical Report (2013).** Mr. Braun conducted a cultural resources reconnaissance survey and co-authored a technical report in support of a CEQA review and preparation of an Initial Study for a proposed 20 acre solar energy facility on private land in the City of Blythe, Riverside County, California.
- **Zuni Photovoltaic Solar Energy Facility, Cultural Resources Reconnaissance Survey and Technical Report (2013).** Mr. Braun conducted a cultural resources reconnaissance survey and co-authored a technical report in support of a CEQA review and preparation of an Initial Study for a proposed 20 acre solar energy facility on private land in the town of Apple Valley, San Bernardino County, California.
- **Desert Harvest Solar Project (CEQA-equivalent document) (2012).** Under contract with EDF Renewable Energy, Mr. Braun assisted senior cultural resources staff with writing the cultural resources, Native American concerns, and paleontology sections of the Desert Harvest EIS. The proposed project is a 1,280 acre 150 MW photovoltaic generating facility in the Chuckwalla Valley near Desert Center, California.

Argonne National Laboratory (Environmental Sciences Division) 2010-present

The Environmental Sciences Division at Argonne conducts environmental analyses in compliance with NEPA and other applicable environmental regulations. The main Argonne Campus is located in Lemont, Illinois with satellite branches in Denver, Colorado and Washington, D.C.

- **Programmatic Environmental Impact Statement for Solar Energy Development in Six Western States (2010-2012).** Under contract with the BLM, Mr. Braun provided technical expertise by developing, synthesizing, and interpreting prehistoric and historic contexts, ethnohistoric contexts, paleontological contexts and Native American concerns in order to assess the impacts to these resources at the programmatic level and a more focused Solar Energy Zone level. The six western states that were analyzed in this study were California, Nevada, Arizona, Utah, New Mexico, and Colorado. This research involved archival studies, communication and coordination with cooperating partners in the BLM, National Park Service (NPS), State Historic Preservation Officers (SHPO), as well

as Native American tribal governments, and responding to and addressing comments from cooperators and the public.

- **Oil Shale and Tar Sands Programmatic Environmental Impact Statement (2011-2012).** Mr. Braun assisted senior cultural resource staff in updating a Class I survey based on GIS data from SHPOs in Wyoming, Colorado and Utah for the BLM. Through the analysis of this data, a predictive model was developed in determining the probability of encountering significant archaeological sites in the affected areas proposed for oil shale and tar sands development.
- **Generic Environmental Impact Statements for License Renewals for the Nuclear Regulatory Commission (NRC) (2010-2012).** Under contract with the Nuclear Regulatory Commission, Mr. Braun conducted archival and site specific analyses for impacts related to the relicensing of NRC permitted facilities for the Diablo Canyon Nuclear Power Plant (California), the Davis Besse Nuclear Power Station (Ohio), and the Grand Gulf Nuclear Station (Mississippi).
- **2012-2012 Outer Continental Shelf Oil and Gas Programmatic Environmental Impact Statement (2012).** Mr. Braun conducted archival research related to whaling practices by indigenous groups on the North Slope, the Chukchi Sea and the St. Lawrence Island regions of Alaska. This information was then used to analyze potential impacts that off-shore oil and gas leases issued by the Bureau of Ocean Energy Management, Regulation and Enforcement would have on indigenous whaling practices.
- **Uranium Leasing Program Programmatic Environmental Impact Statement (2012).** Mr. Braun conducted research analyzing potential impacts to cultural resources in uranium mining lease tracts in Colorado. This research was conducted in conjunction with the Department of Energy which issues the leasing permits and the Colorado and Utah SHPOs.
- **Long-Term Monitoring Strategies for Cultural and Natural Resources Affected by Utility Scale Solar Energy Development on BLM lands (2011).** Mr. Braun collaborated in a multi-disciplinary group to develop strategies for the protection and monitoring of significant resources affected by large-scale solar energy projects on BLM land in California, Nevada, Arizona, Utah, New Mexico and Colorado.
- **National Register of Historic Places Evaluation of Five Test Grids and Buildings at Dugway Proving Ground, Dugway, Utah (2011).** Under contract with the Department of Defense, Mr. Braun conducted field work and evaluations of historic properties related to the chemical and biological weapons testing that occurred at Dugway Proving Ground in the post-World War (WW) II and Cold War Eras. Evaluations were conducted of large-scale grids which were laid out in a pattern to collect sampling information about the rate of dispersal and efficacy of the agent being tested from the air or the ground, as well as evaluations of a naval gun and a WW II Era tar-paper structure.
- **National Register of Historic Places Evaluation of the Intense Pulsed Neutron Source (IPNS) at Argonne National Laboratory, Argonne, Illinois (2012).** Under the direction of senior cultural resources staff, Mr. Braun conducted research related to the history of neutron studies at Argonne and other facilities to evaluate the significance of the IPNS located at Argonne. The IPNS was the first neutron accelerator of its kind constructed in the world, and this user-facility provided physicists extensive knowledge regarding the behavior of high-speed neutron activity.
- **Phase I Cultural Resources Survey for the Materials Design Laboratory at Argonne National Laboratory, Argonne, Illinois (2010).** Mr. Braun assisted senior cultural resources staff in planning, conducting and authoring a Phase I survey for cultural resources potentially affected by construction of the Materials Design Laboratory and ancillary facilities.

American Resources Group……..(2012)

American Resources Group is a cultural resources firm based out of Carbondale, Illinois.

- **Keystone XL Pipeline Phase I Cultural Resources Survey (2012).** Mr. Braun conducted a pedestrian survey in Eastern Nebraska for a re-alignment of the controversial Keystone XL Pipeline.

Professional Affiliations and Training

- Section 106 Agreement Documents (National Preservation Institute, 2012)
- Consultation and Protection of Native American Sacred Lands (National Preservation Institute, 2012)
- NEPA and the National Historic Preservation Act (ICF, 2013)
- CEQA and Historic Resources (CPF, 2013)
- UXO Hazards Training

DECLARATION OF
Ellen LeFevre

I, Ellen LeFevre, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Siting Transmission and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Environmental Justice for the Stanton Energy Reliability Center based on my independent analysis of the Application of Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/17/18 Signed: Ellen LeFevre

At: Sacramento, California

DECLARATION OF
Ellen LeFevre

I, Ellen LeFevre, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Siting Transmission and Environmental Protection Division as a Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Socioeconomics for the Stanton Energy Reliability Center based on my independent analysis of the Application of Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 15, 2018 Signed: Ellen LeFevre

At: Sacramento, California

CALIFORNIA
ENERGY COMMISSION

Ellen LeFevre
Planner II

Education, Certification & Associations

Sacramento State
Degree: Bachelor of Science in Geology with minor in Anthropology

American River College
Degree: Associate in Science in Mathematics with emphasis in General Science

UC Davis Extension
Land Use and Environmental Planning courses

Experience

Planner II
California Energy Commission, State of California

- Evaluate and analyze environmental and socioeconomic effects of proposed energy facilities to ensure the requirements of the Warren-Alquist Act and California Environmental Quality Act are satisfied.
- Prepare socioeconomic, environmental justice, and land use assessments as a subject matter expert for proposed and existing energy facility sites. Prepare final analyses for power plant applications in the form of expert technical testimony.
- Evaluate the licensee's compliance with conditions of certification for power plant facilities.

Planner I
California Energy Commission, State of California

- Evaluate and analyze environmental and socioeconomic effects of proposed energy facilities to ensure the requirements of the Warren-Alquist Act and California Environmental Quality Act are satisfied.
- Prepare written testimony for multiple energy projects
    - Palmdale Energy Project – prepare Socioeconomic analysis for a Major Amendment Preliminary and Final Staff Assessments
    - Sonoran Energy Project – prepare Socioeconomic analysis for petition to amend
    - Alamitos Energy Center – prepare Socioeconomic analysis for Preliminary and Final Staff Assessments
    - Pomona Repower Project – prepare Socioeconomic analysis for small power plant exemption

1516 Ninth Street, MS 40◆Sacramento, CA 95814 ◆ (916) 651-2907 ◆ ellen.lefevre@energy.ca.gov

DECLARATION OF
Brett Fooks

I, Brett Fooks, declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division as a Mechanical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the staff testimony on Hazardous Materials Management and Worker Safety and Fire Protection, for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 15, 2018 Signed: Brett Fooks

At: Sacramento, California

BRETT FOOKS, P.E.

MECHANICAL ENGINEER

PROFESSIONAL EXPERIENCE

California Energy Commission - STEP **Sacramento, CA** **2/2014 - Present**

The Commission ensures that energy facilities (power plants) are permitted in an acceptable manner. The STEP division prepares environmental documentation for the Commission as required by the California Environmental Quality Act (CEQA).

MECHANICAL ENGINEER

Provide independent engineering analysis for various technical areas with an emphasis on hazardous materials management, worker safety, & fire protection.

- Review, analyze and prepare engineering analysis for hazardous materials management, fire protection, and worker safety for gas-fired power plants.
- Provide written and oral expert witness testimony at commission hearings.
- Conduct power plant inspections during construction and operational phases.
- Investigate accident, fire, and hazardous materials incidents at licensed power plants.

Capital Engineering Consultants, Inc. **Rancho Cordova, CA** **6/2004 – 2/2014**

A leader in mechanical engineering design in Northern California since 1947 specializing in areas including K-12 Education, Higher Education, Civic and Justice, and Healthcare.

SENIOR ENGINEER, ASSOCIATE

Manage the design, project specification, calculations and cost estimations for new and renovated construction projects. Oversee and supervise the daily workload, mentoring, and quality control for an assigned junior engineer.

- Plan and monitor the workload of projects, while preparing and taking responsibility for the concept of and preliminary engineering solutions for the detailed design phase.
- Implement the detailed design engineering of HVAC systems; code review, heating and cooling load calculations, air-flow requirements, ductwork sizing and layout, piping sizing and layout, equipment selection, and system controls with an emphasis on healthcare facilities.
- Prepare and deliver calculations for Title 24 building compliance.
- Prepare and deliver calculations and documents for project LEED certification.

Select Accomplishments

- Assisted in the implementation and teaching of new 3-D modeling software, CAD-MECH, to team members for the Sutter Health Eden Medical Center.
- Worked with co-workers to create and implement standards for plumbing calculations firm wide leading to an increased efficiency.

EDUCATION

STATE OF CALIFORNIA ~ LICENSED PROFESSIONAL ENGINEER
UC DAVIS EXTENSION – WORKPLACE HEALTH & SAFETY CERTIFICATE (2016)

BACHELOR OF SCIENCE ~ MECHANICAL ENGINEERING (2004)
California Polytechnic State University, San Luis Obispo

Computer Literacy: Proficient in the use of various software applications including Microsoft Office (Word, Excel, PowerPoint, Outlook) AutoCAD 2012/2013, Revit 2013/2014, Visio, NavisWorks, and ProjectWise.

DECLARATION OF
Geoff Lesh

I, Geoff Lesh, declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Engineering Office as a Senior Mechanical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the staff testimony for the Hazardous Materials Management and the Worker Safety/Fire Protection technical sections for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: Geoff Lesh Signed: 5/17/2018

At: Sacramento, California

Geoffrey Lesh

WORK HISTORY

California Energy Commission Senior Mechanical Engineer 2002 - Current

- Analyze siting permit applications for gas-fired and solar-thermal power plants in the technical areas of hazardous materials management, fire safety, security, and worker safety plans
- Provide written and oral expert witness testimony at Energy Commission hearings on power plant fire protection plans, risk assessments, and adequacy of local fire departments
- Recommend mitigations as needed
- Inspect power plants during construction and operational phases
- Investigate accident, fire, and hazardous materials incidents at power plants

Self-Employed Independent Investor 2000 - 2002

- Wrote market analysis computer software

Read-Rite Corp Wafer Engineering Manager 1994 - 2000

- Designed and developed wafer manufacturing processes for computer data storage systems. Managed team of engineers and technicians responsible for developing wet and dry chemical processes for manufacturing, including process and safety documentation
- Managed process and equipment selection for manufacturing processes
- Processes included vacuum processed metals and ceramics, grinding-polishing, plating, etching, encapsulation, process troubleshooting, and SPC reporting

Dastek Corp (Komag Joint Venture Start-up) Wafer Engineering Manager 1992 - 1994

- Developed wafer processes for new-technology recording head for hard disk drives
- Managed team of engineers and technicians
- This position included start-up of wafer fab, including line layout, purchase, installation, and startup of new process equipment, etc.

Komag, Inc Alloy Development Manager 1989 - 1992

- Developed new vacuum-deposited recording alloys
- Responsible for planning and carrying-out tests, designing experiments, analyzing results, managing test lab conducting materials characterizations
- Extensive process modeling, experiment design and data analysis

Verbatim Corp (Kodak) Process Development Manager 1983 – 1989

- Mechanical/materials engineering for computer disk manufacturing, including product, process, and equipment including metal-ceramic-plastic processes for optical disk development
- Production processes included metal plating, metal evaporation, reactive sputtering, laser-based photolithography, injection molding
- Steering Committee Member, Center for Magnetic Recording Research, UC San Diego
- Steering Committee Member, Institute for Information Storage Technology, Santa Clara University

IBM Corp Mechanical/Process Engineer 1977 - 1983

- Product development for photocopiers, semiconductors, and computer data tape-storage systems

EDUCATION

Stanford University, Master of Science Degree	Materials Science and Engineering
UC-Berkeley, Bachelor of Science Degree (Double Major)	Mechanical Engineering, Materials Science and Engineering
University of Santa Clara, Graduate Certificate	Magnetic Recording Engineering

PROFESSIONAL LICENSES and CERTIFICATIONS

Registered Professional Engineer, California (PE)	Mechanical #M32576 Fire Protection #FP1827 Metallurgical #MT1940
Certified Safety Professional (CSP)	Board of Certified Safety Professionals
Certified Fire Protection Specialist (CFPS)	Certified Fire Protection Specialist Board of National Fire Protection Association
Certified Fire and Explosion Investigator (CFEI)	Board of National Association of Fire Investigators

OSHA 40-hr HAZWOPER Hazardous Materials Incident Training

PROFESSIONAL ASSOCIATIONS

American Society of Safety Engineers – Professional Member
Society of Fire Protection Engineers – Professional Member
National Fire Protection Association – Member
National Association of Fire Investigators – Member

PUBLICATIONS

All-Solid Lithium Electrodes with Mixed-Conductor Matrix, J. Electrocchem. Soc. 128, 725 (1981).
Proc. Symp. on Lithium Batteries, H.V. Venkatasetty, Ed., Electrochem Soc (1981), p. 467.

PATENTS

Method of Preparing Thermo-Magneto-Optic Recording Elements, US Patent# 4,892,634, (assigned to Eastman Kodak Co.)

DECLARATION OF
Mark R. Hamblin

I, Mark R. Hamblin declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Environmental Protection Office as a Planner II.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepare the staff testimony on Land Use, for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: April 25, 2018 Signed: Mark R. Hamblin

At: Sacramento, California

CALIFORNIA
ENERGY COMMISSION

MARK R. HAMBLIN
PLANNER II

Education

Master of Public Administration. California State University Bakersfield. Bakersfield, California. August 1988.

Bachelor of Science Public Administration. California State University Sacramento. Sacramento, California. May 1984.

Experience

California Energy Commission
Planner II — November 2000 to present
I identify, describe, and analyze complex land use and planning or visual resource issues pertaining to the siting of a thermal power plant and transmission facilities using applicable federal, state, and local laws, ordinances, regulations and standards (including the California Environmental Quality Act [CEQA] and Guidelines), and the California Energy Commission siting regulations in a written analysis and/or testimony; participate in public workshops, and present sworn testimony during evidentiary hearing(s) before Commissioners, if requested.

Yolo County Planning and Public Works Department,
Associate Planner — June 1992 to October 2000
I advised and assisted individuals in the processing of land use and planning proposals (general plan amendments, conditional use permits, subdivision maps, etc.). I reviewed the proposal for consistency and compliance with state environmental, planning and zoning law (e.g., CEQA Guidelines, state Subdivision Map Act, state Williamson Act Program, etc.), the county General Plan and the county government code for presentation in a staff report before the planning commission and/or board of supervisors. I served as a county representative/liaison to citizens' organizations and interagency committees (county airport advisory committee, county habitat conservation plan steering committee, and community general plan citizen advisory committee[s]). I drafted zoning ordinances. I hired and supervised consultants. I performed contract management in the preparation of land use and environmental assessment documents (e.g., general plan amendment, environmental impact report). I served as a zoning administrator deciding on minor land use proposals. I conducted zone code enforcement with cooperation from the district attorney's office. I reviewed building plans for compliance with county codes and issuance of the permit. I answered questions from individuals who visited the public counter and over the telephone regarding land use and development in the county.

1516 Ninth Street, MS 40◆Sacramento, CA 95814 ◆ (916) xxx-xxxx ◆ ___.___@energy.ca.gov

DECLARATION OF
Christopher Dennis, P.G., C.H.

I, **Christopher Dennis**, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as an Engineering Geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Noise and Vibration for the **Stanton Energy Reliability Center** (16-AFC-01) based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 18, 2018 Signed: C.B.D.

At: Sacramento, California

CHRISTOPHER DENNIS, JD

PG #7184, CH #963

EXPERIENCE SUMMARY

Mr. Dennis is a licensed Professional Geologist and Certified Hydrogeologist with the State of California, and a California Qualified Stormwater Practioner/Developer. Mr. Dennis has over 25 years of professional technical and management experience. Fourteen of those years, he worked in private industry as a consultant. For the last 10 years, he has worked in the Energy Commissions Siting, Transmission and Environmental Protection Division. Mr. Dennis has been a portfolio manager for several major oil companies and the East Bay Municipal Utility District. He actively managed Unocal CERT, ExxonMobil, and ChevronTexaco pipeline, service station, bulk fueling, and terminal sites.

EDUCATION/REGISTRATION/CERTIFICATIONS

Pepperdine Law School, Certificate in Dispute Resolution, 1997
Whittier College of Law, J.D., 1996
California State University, Fullerton, B.S. Geology, 1989
Certified Hydrogeologist, State of California #963
Professional Geologist, State of California #7184
Qualified Stormwater Practioner/Developer #767
OSHA-SARA 40-Hour Hazardous Waste Activity Training 29 CFR 1910.120

PROFESSIONAL HISTORY

2007 to Current California Energy Commission, Engineering Geologist
2004 to 2007 Science Applications International Corporation, Senior Geologist
2004 to 2004 Bay Consulting Services, LLC, Principal
2001 to 2004 Cambria Environmental Technology, Inc., Office Manager, Senior Geologist
2000 to 2001 Alisto Engineering, Inc, Project Manager, Senior Geologist
1998 to 2000 Alton Geoscience-TRC, Inc., Project Manager, Senior Geologist
1993 to 1995 GeoResearch, Inc., Project Manager, Staff Geologist
1990 to 1993 AeroVironment, Inc., Staff Geologist
1989 to 1990 Applied Geosciences, Inc., Staff Geologist (part-time)

2007 to Current, California Energy Commission, Sacramento, CA
Engineering Geologist
Siting, Transmission, and Environmental Protection Division

One of the primary functions of the Energy Commission is CEQA review of license applications to build and operate power plants 50 MW and greater in California. In the Energy Commission's Engineering Office, Mr. Dennis helps fulfill this function by working through and managing a wide variety of CEQA and environmental policy issues. The product of this effort is expressed in expert testimony and staff analysis for siting new power plants and power plant compliance activity.

He has worked on simple-cycle, combined cycle, cogeneration, geothermal, and large-scale thermal solar power plants, and is familiar with most of the major power plants in construction and operation in California today. He has conducted construction and operation compliance inspections at many of these plants. When issues involving Energy Commission or state policy, Mr. Dennis participates in meetings with his deputy director where he provides input on his assessments and recommendations.

A list of power plant siting cases for which he has authored assessments, in whole or in part follows: Abengoa Solar (Solar Thermal), Chevron USA (Natural Gas), CPV Sentinel (Natural Gas), Imperial Solar (Solar Thermal), Ivanpah SEGS (Solar Thermal), Palmdale Hybrid (Natural Gas-Solar Thermal), Quail Brush (Natural Gas), Rio Mesa SEGF (Solar Thermal), and San Joaquin Solar (Solar Thermal-Biomass).

Mr. Dennis also works on power plant construction and operation compliance, some of which are: Abengoa Solar, Colusa, CPV Sentinel, Elk Hills, geothermal power plants, Henrietta, Inland Empire, Ivanpah SEGS, La Paloma, Marsh Landing, MountainView, TID Almond, SEGS III-VII, SEGS VII & IX, and Sutter.

Mr. Dennis has developed a broad knowledge of CEQA/NEPA impact analysis and mitigation involving noise, waste management, water resources, water quality, soil resources, erosion hazards, geologic resources and hazards, and paleontological resources. The assessments he has authored involve basin-wide water management, basin overdraft, water quality, water conservation, recycled water, water transfers, groundwater recharge, flood potential, and wind/water soil erosion. He has worked on groundwater basin modeling, basin water balance estimates, and evaluations of groundwater drawdown impacts to groundwater quality, biology, and other groundwater users. He has also evaluated potential impacts from geologic hazards related to faults, earthquake related ground shaking, landslides, subsidence, compressive and expansive soils, and flood potential.

Mr. Dennis manages the Energy Commission's Quarterly Fuel and Energy Reporting (QFER) program for the water use and wastewater generation of all power plants 20 MW and greater in California. He designed the forms used to collected the QFER water and wastewater data and developed a database to manage the data collected, and through the course of this data collection effort, developed constructive working relationships with plant operators. The QFER water and wastewater information collected is used by news agencies, federal and state agencies, and members of the public.

Mr. Dennis trains and manages students to assist him with the QFER data collection and power plant construction and operation compliance oversight. He has been frequently asked to act as the Unit Supervisor when the supervisor is away on vacation, and works with other Energy Commission employees and government agencies on focused tasks and to resolve issues.

2004 to 2007, Science Applications International Corporation, Sacramento, CA
Senior Geologist/Project Manager
Consultant for Chevron, Northern California

Mr. Dennis managed environmental compliance for several former crude oil and Bunker C pipeline right-of-way and pump stations sites within the Central California region. He consolidated all groundwater monitoring and sampling for the portfolio into one program and managed that program. He developed and implemented new written field QA/QC procedures for the entire portfolio of sites, and developed and implemented an analytical laboratory evaluation plan. He also initiated low-flow groundwater sampling from wells and the use of pre-packed filter screens in open boreholes to reduce water turbidity in samples collected, allowing laboratory detection limits to be low enough for polynuclear aromatic hydrocarbon impacted groundwater risk-assessment evaluation. He initiated a crude oil remediation study for the portfolio. Mr. Dennis also developed workplans and conducted subsurface soil and groundwater investigations and prepared reports documenting the results of those investigations. He developed a soil vapor survey workplan and installed multiple completion soil vapor wells. He also worked with a GIS team to incorporate all pertinent site data into a web-based GIS and geo-reference the GIS as appropriate. This portfolio required a significant amount of front-end planning and coordination. Mr. Dennis developed and managed all site budgets and billing, and performed annual staff reviews. As a senior project manager, Mr. Dennis was the geologist in responsible-charge for the work performed by other geologist in the office and while conducting work in the field.

2004 to 2004, Bay Consulting Services, LLC, Rocklin, CA
Consultant/Principal Owner

Mr. Dennis developed the company from a concept to a viable business. Provided environmental consulting services for Chevron Corp. projects and other environmental companies. Completed several closure requests with Tier I/II risk analysis. Conducted company billing and accounting.

2001 to 2004, Cambria Environmental Technology, San Ramon and Rocklin, CA
Senior Geologist/Office Manager
Consultant for Chevron and East Bay Municipal Utility District

Mr. Dennis started Cambria's Rocklin office and grew that office to a staff of over 12 in less than a year through initiative and hard work. He worked as a liaison for the client and regulators, developed and managed all site budgets and billing, and performed annual staff reviews, hiring, and employment termination.

Chevron, Northern California. Mr. Dennis managed environmental compliance for a portfolio of 40 to 60 Chevron Corp. service stations and bulk fuel plants in Northern California. He developed workplans and conducted subsurface soil and groundwater investigations for these sites, some of which were located in the sensitive Lake Tahoe area. Each site was unique with its own operational history and hydrogeologic conditions. He achieved regulatory closure of over 30 Chevron sites by application of active remediation and by demonstration that attenuation processes would naturally cleanup the refined fuel products in the soil and groundwater.

To bring these sites to regulatory closure, Mr. Dennis initially prepared workplans to develop an understanding of the site history, hydrogeologic conditions, and to identify the extent, concentration, and type of fuel product in the subsurface associated with the site. The workplans included regulatory record searches, aerial photographs evaluations, the design of soil borings and groundwater monitoring well networks for subsurface geology and aquifer characterization. Mr. Dennis then conducted site investigations pursuant to these regulatory approved workplans.

The site investigations included the drilling soil borings, logging of soil borings, and the collection of soil samples from the vadose zone, capillary fringe, and saturated zones for chemical and physical analyses and grab-groundwater samples for chemical analyses. Based on these results and field judgment, Mr. Dennis was responsible for the completion of soil vapor extraction wells and groundwater monitoring wells in accordance with industry guidelines and best professional practice. He also was the geologist in responsible-charge for the preparation of reports that evaluated the data collected and made conclusions and recommendations based on the results of the evaluation. As a senior project manager, Mr. Dennis was the geologist in responsible-charge for the work performed by other geologist in the office and while conducting work in the field.

Mr. Dennis helped develop and received State Underground Storage Tank (UST) Fund pre-approved for approximately 100 low-risk ChevronTexaco sites as part of a management transfer initiative. He also worked with Caltrans on a freeway (CA I-80) expansion project that required excavation and dewatering beneath a former Chevron site. Mr. Dennis worked with Caltrans to build into the Caltrans request for bid specifications for handling petroleum impacted excavated soils and water. As a result of this effort, the expansion project is now complete and the former Chevron site remediated.

East Bay Municipal Utility District, Northern California. Mr. Dennis brought to Cambria a three-year, $275K/yr maximum EBMUD contract. The contract focused on pre-trenching activity soil sampling/analysis for potential contaminant identification and soil disposal. He developed a small group of professionals to manage this portfolio. As part of this project, Mr. Dennis managed several EPA SW-846 statistical soil analysis projects at District landfill sites with volumes up to approximately 180,000 cubic yards of landfilled soil. He created and surveyed statistical grids on the landfills and characterized the soil for removal to Class III or Class II landfills. He also conducted site investigations and quarterly groundwater monitoring projects at EBMUD facilities at the Camanche and Pardee Reservoirs.

2000 to 2001, Alisto Engineering, Lafayette, CA
Senior Geologist/Project Manager
Consultant for Caltrans and Industrial Facilities

Caltrans, Northern California. Mr. Dennis conducted site investigations at Caltrans sites and conducted statistical analyses of the soil from the shoulders of several Caltrans highways in Southern California. He performed the statistical analyses to determine hazard levels of lead in the soil, which would assist in soil management planning in proposed highway construction corridors. The statistical analyses were performed on sample populations ranging from approximately 80 to 300.

Industrial Facilities, Northern California. Mr. Dennis also conducted site investigations at several industrial sites in Northern California. He developed storm water pollution prevention plans (SWPPPs) for development projects in downtown San Jose and a Caltrans project along CA I-680. Mr. Dennis worked as a liaison for clients and regulators, and developed and managed all site budgets and billing for both the industrial facilities and Caltrans projects.

1998 to 2000, Alton Geoscience-TRC, Concord, CA
Senior Geologist/Project Manager
Consultant for ExxonMobil and Quick Stop Markets

ExxonMobil and Quick Stop Markets, Northern California. Mr. Dennis managed environmental compliance for a portfolio of ExxonMobil and Quick Stop Markets service station and bulk fuel plant sites. He developed workplans and conducted subsurface soil and groundwater investigations. Mr. Dennis achieved regulatory closure of over 30 of these sites by application of active remediation and demonstration that attenuation processes would naturally cleanup the refined fuel products in the soil and groundwater. Site investigations included the drilling and logging of soil borings, and collection of soil samples from the vadose, capillary fringe, and saturated zones for chemical and physical analyses and grab-groundwater samples were collected for chemical analyses. Based on these results and field judgment, Mr. Dennis was responsible for the completion of soil vapor extraction wells and groundwater monitoring wells in accordance with industry guidelines and best professional practice. He was also responsible for the preparation of reports that evaluated the data collected and made conclusions and recommendations based on the results of the evaluation. Mr. Dennis also managed the application of high vacuum, dual-phase (soil vapor and groundwater) extraction at several of these sites.

Notably, after two years of negotiations, technical presentations, and meetings, Mr. Dennis secured the recession of a RWQCB cleanup and abatement order and site closure for a former bulk plant on the sensitive Napa River. This bulk fuel plant was one of several along the river and where the tidal influences on the river affected the petroleum product in the groundwater. Plumes of liquid and dissolved phase hydrocarbons were present in the groundwater at adjacent sites and at the subject site.

1993 to 1995, Project Manager, GeoResearch, Long Beach, CA
Staff Geologist/Project Manager
Consultant for Unocal CERT

Unocal CERT, Southern California. Mr. Dennis managed environmental compliance for a portfolio of Unocal CERT projects in Southern California. He developed workplans and conducted subsurface soil and groundwater investigations for these sites. He frequently utilized mobile laboratories to assist in the placement of soil borings, vapor extraction, and groundwater wells. He conducted risk assessments, site assessments, tanks pulls, station demolitions, aquifer and vapor extraction tests, and remediation system designs and installations.

1990 to 1993 Staff Geologist, AeroVironment, Monrovia, CA
Staff Geologist/Project Manager
Consultant for Industrial Sites and Air Force Base Projects

Industrial Sites and Air Force Base Projects, Southern California. Mr. Dennis managed industrial projects and participated on government projects as a project geologist. He was a team leader during field documentation over 400 former homestead sites at Edwards AFB using GPS technology. This documentation included well locations, archaeological finds, and biological concerns. Mr. Dennis helped develop a database to manage all the data collected. He also conducted groundwater sampling according to AFCEE protocols and conducted soil-vapor and geophysical surveys at Vandenberg AFB. He was a member of the design team of a mobile soil-vapor laboratory that housed a gas chromatograph for sample analysis, and was lead designer of an insitu soil-vapor sample collection system. Mr. Dennis also managed two field teams for monitoring landfill vapor emissions and subsurface migration at active San Bernardino and Riverside County operated landfills, wrote the standard operating procedures for the fieldwork, conducted field training, and prepared quarterly AQMD reports. He also developed the contract for and managed quarterly groundwater monitoring and sampling at the Powerine Oil Refinery in Santa Fe Springs.

PUBLICATIONS

- 2007 and 2011 Integrated Energy Policy Report, California Energy Commission (one of many authors)
- California Energy Commission Final Staff Assessments (CEQA and LORS analysis)
- Numerous Phase I Environmental Site Assessments
- Numerous Groundwater Monitoring Reports
- Numerous Site Investigation Workplans
- Numerous Site Investigation and Remediation Reports

AWARDS

California Energy Commission Superior Accomplishment Award, 2010 & 2014

DECLARATION OF
SHAHAB KHOSHMASHRAB

I, **SHAHAB KHOSHMASHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Siting, Transmission, and Environmental Protection Division as a **Senior Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I participated in the preparation of the staff testimony on **Noise and Vibration** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge. I attest to the accuracy of this testimony, and support its conclusions, finding and recommendations hereto.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony, and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/17/18 Signed: 

At: Sacramento, California

DECLARATION OF
SHAHAB KHOSHMASHRAB

I, **SHAHAB KHOSHMASHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Siting, Transmission, and Environmental Protection Division as a **Senior Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Facility Design** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge. I attest to the accuracy of this testimony, and support its conclusions, finding and recommendations hereto.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony, and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/17/18 Signed: _____

At: Sacramento, California

DECLARATION OF
SHAHAB KHOSHMASHRAB

I, **SHAHAB KHOSHMASHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Siting, Transmission, and Environmental Protection Division as a **Senior Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I participated in the preparation of the staff testimony on **Power Plant Efficiency** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge. I attest to the accuracy of this testimony, and support its conclusions, finding and recommendations hereto.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony, and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/17/18 Signed: _____

At: Sacramento, California

DECLARATION OF
SHAHAB KHOSHMASHRAB

I, **SHAHAB KHOSHMASHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Siting, Transmission, and Environmental Protection Division as a **Senior Mechanical Engineer**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I participated in the preparation of the staff testimony on **Power Plant Reliability** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge. I attest to the accuracy of this testimony, and support its conclusions, finding and recommendations hereto.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony, and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/17/18 Signed: _____

At: Sacramento, California

Shahab Khoshmashrab, P.E.
Senior Mechanical Engineer

Professional Experience

2001-Current—Senior Mechanical Engineer – Siting, Transmission, and Environmental Protection Division – California Energy Commission

- Perform analysis of, and address complex engineering issues related to, generating capacity, power plant reliability, energy efficiency, noise and vibration, jurisdictional determination, and the mechanical, civil, electrical, and structural aspects of power plants' licensing, construction, and operation.

- Review and evaluate projects to ensure compliance of power plants and related facilities with applicable laws, ordinances, regulations, and standards and California Environmental Quality Act.

- Assist the California Energy Commission in policy making related to electricity generation.

1998-2001—Structural Engineer – Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced both structural plans and detailed shop drawings using AutoCAD.

1995-1998—Manufacturing Engineer – Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

Education

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California
  License No. M 32883, Exp. 9/30/2018

DECLARATION OF
HUEI-AN (ANN) CHU

I, Huei-An (Ann) Chu, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as an Air Resources Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony **on Public Health** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/15/2018

Signed: Huei-An Ann

At: Sacramento, California

Huei-An (Ann) Chu

1516 Ninth Street, MS-46, Sacramento, CA 95814
Phone: 916-651-0965, Email: Ann.Chu@energy.ca.gov
Citizenship Status: U.S. Citizen

EDUCATION

PhD, Environmental Sciences and Engineering, 05/2006
School of Public Health, University of North Carolina at Chapel Hill
Area of Specialization: Environmental Risk Assessment, Environmental Management and Policy, Risk-Based Regulation, Biostatistics, Environmental Epidemiology

MEM, Environmental Management, 05/2000
School of Forestry and Environmental Studies, Yale University, New Haven, CT

MS, Environmental Engineering, 06/1998
National Taiwan University, Taipei, Taiwan

BA, Geography, with honors, 06/1996
National Taiwan University, Taipei, Taiwan

SKILLS

Language: Fluent in Chinese and English.

Computer software and programming skills: HARP, SAS, Stata, Minitab, ArcGIS, ArcView, ArcInfo, Stella, Crystal Ball, ISC, ERMapper, Microsoft Excel, PowerPoint, Word.

WORK EXPERIENCE

Air Resources Engineer, California Energy Commission, 1/12/2012 - Present
- Independently performs responsible, varied analyses assessing air quality and public health impacts of energy resource use and large electric power generation projects in California.
- Model air quality and public health impacts of stationary sources using HARP (Hot Spot Analysis and Reporting Program).
- Identify air quality and public health impacts of stationary sources and measures to mitigate these impacts following California Environmental Quality Act and regulations of US EPA (including the National Environmental Policy Act), ARB, and the Districts.
- Collect, analyze, and evaluate data on the effects of air pollutants and power plant emissions on human health, and the environment.
- Ensure conditions of certification are met and recommending enforcement actions for violations.

Research Associate, Taiwan Development Institute, 10/01/2010 – 12/31/2011
- Provided professional consultation for the environmental risk assessment of Taiwan's techno-industrial development initiatives
- Reviewed the environmental risk assessment reports of Taiwan's techno-industrial development initiatives
- Presented in various distinguished lecturer series about environmental risk assessment

Consultant, Chu Consulting, 08/2007 - 07/2010
- Conducted a cumulative risk assessment to evaluate the risk associated with the emissions of VOCs from a petrochemical plants in southern Taiwan
- Used EPA's ISC3 model (based on Gaussian dispersion model) to simulate the dispersion and deposition of VOCs from this petrochemical plant to the neighboring areas, then used ArcGIS to spatially combine the population data and VOC simulation data (and further calculated risks)

- Built a framework of risk-based decision making to set the emission levels of VOCs to reduce people's exposure and the risk of experiencing health problems
- Presented in conference: SRA 2007
- Awarded: CSU-Chico BBS Faculty Travel Funds (2007)

Environmental Justice Intern, Clean Water for North Carolina (CWFNC), Summer, 2005
- Reviewed and critiqued key state environmental policies and the federal EPA Public Participation Policy.
- Interviewed impacted communities, member organizations of the NC Environmental Justice Network, state policy officials about how those policies are actually implemented.
- Wrote a report about the survey and review of environmental justice needs for key state policies.
- Report Publication: "Achieving Environmental Justice in North Carolina Public Participation Policy" (Aug, 2005).

Volunteer, New Haven Recycles and Yale Recycling, 08/1998 – 05/2000
- Promoted recycling and conservation
- Checked trash cans (chosen randomly) and recycling bins at each entryway of residential college, then gave grades.

Volunteer, Urban Resource Initiative (URI), Summer, 1998
- Planted trees for local community of New Haven for a better and sustainable environment

RESEARCH EXPERIENCE

Postdoctoral Research

Department of Public Health Sciences, University of California, Davis, 07/01/2010 – 09/30/2012
Research advisor: Dr. Deborah H. Bennett and Dr. Irva Hertz-Picciotto
- Work on two projects: NIEHS-funded ***Childhood Autism Risks from Genetics and Environment (CHARGE)*** and EPA-funded ***Study of Use of Products and Exposure Related Behavior* (*SUPERB)***.
- Perform statistical and quantitative analyses with SAS to analyze collected house dust data and children's urine concentrations of metabolites.
- Conduct exposure assessment to investigate if pesticides, flame retardants, and phthalates are risk factors for children autism.
- Conduct exposure assessment to explore the relationships between children's exposure to phthalate, benzophenone-3 (oxybenzone), triclosan, and parabens, and the use of personal care products.
- Produce scholarly peer-reviewed publications of methodology and findings, and write the final reports of both projects.

Carolina Environmental Program, University of North Carolina at Chapel Hill, 01/01/2006 – 12/31/2006
Research advisor: Dr. Douglas J. Crawford-Brown
- Applied a framework of risk-based decision-making to perchlorate in drinking water. (Awarded: SRA Annual Meeting Travel Award 2006)
- Conducted a material and energy flow analysis (MEFA) to quantify the overall environmental impact of Bank of America operations, and quantitatively analyze the strategies BOA might adopt to reduce these impacts and achieve sustainability. (Report Publication: "Environmental Footprint Assessment")

Doctoral Research, 08/2000-12/2005

Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill
Research advisor: Dr. Douglas J. Crawford-Brown
- Dissertation topic: "**A framework of Risk-Based Decision Making by Characterizing Variability and Uncertainty Probabilistically: Using Arsenic in Drinking Water as an Example**".
- Conducted risk assessment for arsenic in drinking water.
- Conducted theoretical analysis on the variability and uncertainty issues of risk assessment.

- Conducted a meta-analysis to improve dose-response assessment.
- Conducted analytical and numerical analysis to build a new framework of risk-based decision-making which can be applied coherently across the regulation decisions for different contaminants.
- Presented in conferences: APPAM (2004), SRA (2004, 2005 and 2006), DESE Seminar (2005), CEP Symposium on Safe Drinking Water (2006).
- Awarded: SRA Annual Meeting Student Travel Award (2004 & 2005), UNC-CH Graduate School Travel Grants (2004), UCIS Doctoral Research Travel Awards (2002).

Master's Research

School of Forestry and Environmental Studies, Yale University, 08/1999 - 06/2000
Research advisor: Dr. Xuhui Lee
- Master's project: "**Forest Stand Dynamics and Carbon Cycle**".
- Research project: "Monitoring Forest CO_2 Uptaking"
- Used remote sensing (ERMapper) to investigate the role of forest in the uptake of CO_2.
- Awarded from Teresa Heinz Scholars for Environmental Research Program (2000) and Klemme Award (1999).

Graduate Institute of Environmental Engineering, National Taiwan University, 06/1996 - 06/1998
Research advisor: Dr. Shang-Lien Loh
- Master's thesis: "**The Loads of Air Pollutants from Urban Areas on a Neighboring Dam and its Water Quality**"
- Research Projects: "Research on Air Pollutant Deposition in Urban Areas" and "the Fate and Flow of Recyclable Materials"
- Used Gaussian's Dispersion model (ISC3) to investigate the loads of air pollutants on dam water.

TEACHING EXPERIENCE

Lecturer

Department of Environmental Studies, California State University at Sacramento
- Environmental Politics and Policy, Fall 2011

Department of Geological & Environmental Science, California State University at Chico
- Environmental Risk Assessment, Spring 2009 & 2010
- Applied Ecology, Spring 2008
- Pollution Ecology, Fall, 2007

Department of Geography & Planning, California State University at Chico
- Seminar in Applied Geography & Planning – Environmental Regulation and Policy, Fall, 2007

Department of Forestry and Environmental Resources, North Carolina State University
- Environmental Regulation, Fall, 2006

Teaching Assistant

Department of Environmental Sciences and Engineering, UNC-Chapel Hill
- Environmental Risk Assessment, Spring, 2002
- Introduction to Environmental Science, Fall, 2001
- Analysis and Solution of Environmental Problems, Fall, 2001

Lab Instructor

Department of Environmental Sciences and Engineering, UNC-Chapel Hill
- Biology for Environmental Science, Fall, 2000

Graduate Institute of Environmental Engineering, National Taiwan University
- Water Quality Analysis, Fall, 1997

AWARDS and HONORS

- CSU-Chico BBS Faculty Travel Funds, 2007
- Member of Society of Risk Analysis (SRA), 2006-2008
- SRA Annual Meeting Student Travel Award, 2004-2006
- UNC-CH Graduate School Travel Grants, 2004
- Member of Association for Public Policy Analysis and Management (APPAM), 2004-2005
- UCIS Doctoral Research Travel Awards, 2002
- Graduate Student Teaching and Research Assistantships, 2000-2005
- Teresa Heinz Scholars for Environmental Research Program, 2000
- Yale Forestry & Environmental Studies, Klemme Award, 1999

PUBLICATIONS (SELECTED LIST)

Irva Hertz-Picciotto, Deborah H. Bennett, **Huei-An Chu**, "Phthalates in Relation to Autism and Developmental Delay: Exploratory Analyses from the Charge Study". ISEE, Sept 13-16, 2011, Barcelona, Spain

Huei-An Chu and Douglas J. Crawford-Brown, "A Probabilistic Risk Assessment Framework to Quantify the Protectiveness of Alternative MCLs for Arsenic in Drinking Water", *Journal of American Water Works Association*. (Being revised)

Huei-An Chu and Douglas J. Crawford-Brown, "Letter to the Editor: Inorganic Arsenic in Drinking Water and Bladder Cancer: A Meta-Analysis in Dose-Response Assessment", *International Journal of Environmental Research and Public Health*, 2007, 4(4), 340-341.

Huei-An Chu and Douglas J. Crawford-Brown, "Inorganic Arsenic in Drinking Water and Bladder Cancer: A Meta-Analysis in Dose-Response Assessment", *International Journal of Environmental Research and Public Health* 2006, 3(4), 316-322.

S.L. Lo and **H.A. Chu**, "Evaluation of Atmospheric Deposition of Nitrogen to the Feitsui Reservoir in Taipei", *Water Science & Technolog*y, 2006, 53(2), 337-344.

CSE Consulting and the UNC Carolina Environmental Program (CEP), "Environmental Footprint Assessment", Report for Bank of America, Aug, 2006.

Huei-An Chu, "Achieving Environmental Justice in North Carolina Public Participation Policy", Report for Clean Water for North Carolina (CWFNC), Aug, 2005.

Huei-An Chu, "Arsenic and its Health Implications", Report for University Center for International Studies Graduate Travel Awards, 2002.

PRESENTATIONS (SELECTED LIST)

Guest Speaker, "Human Health Risk Assessment – Arsenic in Drinking Water as an Example". Tunghai University, Taichuang, Taiwan. (December 16th, 2010)

Guest Speaker, "Environmental Problems in Developing Countries", Course Title: Developing Countries, Department of Economics, CSU-Chico (October 31st, 2008)

"Cumulative Risk Assessment for Volatile Organic Compounds (VOCs) from Petrochemical Plants in Southern Taiwan". Oral Presentation in Society of Risk Analysis (SRA) 2007 Annual Meeting, San Antonio, TX. (December, 2007)

Guest Speaker, "Arsenic in Drinking Water", Course Title: Environmental Geology, CSU-Chico. (November 13th, 2007)

"Risk-Based Environmental Regulation for Arsenic in Drinking Water", Oral Presentation in Department of Environmental Health Seminar, East Tennessee State University (February 2nd, 2007)

"A Framework of Risk-based Decision Making by Characterizing Variability and Uncertainty Probabilistically: Using Arsenic in Dinking Water as an Example", Oral Presentation in Society of Risk Analysis (SRA) 2006 Annual Meeting, Baltimore. MD. (December, 2006)

“A New Policy Tool to Choose Water Quality Goals under Uncertainty”, Poster Presentation in Society of Risk Analysis (SRA) 2006 Annual Meeting, Baltimore. MD. (December, 2006)

“A framework of Risk-Based Decision Making by Characterizing Variability and Uncertainty Probabilistically: Using Arsenic in Drinking Water as an Example”, Oral Presentation for National Center for Environmental Assessment (NCEA), Environmental Protection Agency (EAP). (October 26th, 2006)

“Probabilistic Risk Assessment for Arsenic in Drinking Water”, Poster Presentation in Carolina Environmental Program (CEP) 2006 Symposium on Safe Drinking Water, Chapel Hill, NC. (March, 2006)

“Probabilistic Risk and Margins of Safety for Water Borne Arsenic”, Poster Platform Presentation in Society of Risk Analysis (SRA) 2005 Annual Meeting, Orlando, FL. (December, 2005)

“Using Meta-Analysis in Dose-Response Analysis – Risk Assessment of Arsenic in Drinking Water as an Example”, Poster Platform Presentation in Society of Risk Analysis (SRA) 2004 Annual Meeting, Palm Springs, CA. (December, 2004)

DECLARATION OF
AbdelKarim Abulaban, Ph.D., P.E.

I, AbdelKarim Abulaban, declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Environmental Protection Office as an Associate Civil Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the staff testimony on Soil and Water Resources, for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9 May 2018 Signed: 

At: Sacramento, California

AbdelKarim Abulaban

Education

Ph.D. Civil Engineering, University of Minnesota (*Hydrology and Water Resources)*.
Thesis title: Modeling the transport of sorbing chemicals in heterogeneous porous media.
M.S. Civil Engineering, Yarmouk University, Irbid, Jordan *(Water Resources).*
Thesis Title: Developing Intensity-Duration-Frequency Curves for Irbid Region.
B.S. Civil Engineering, Yarmouk University, Irbid, Jordan *(water resources stream).*
Senior Project: Design of Water Supply and Sewer Systems for the Northwestern Part of Irbid City (*population 100,000)*.

Registration:

Registered Professional Engineer (Civil) in the state of California (Lic. No. 76030)
Registered as a Qualified SWPPP Developer and Practitioner (QSD/QSP), California Stormwater Quality Association (CASQA) - Cert. # 1160.

Experience - Professional

June 2010-Present: ***Associate Civil Engineer*** CA Energy Commission, Sacramento, CA, USA.	❖ Reviewing and evaluating the construction, operation, and maintenance of energy facilities and power plants for water supply, wastewater disposal, waste, water quality, and stormwater to assess the potential impacts to human health and the environment. ❖ Reviewing sensitive project sites that may have issues involoving flooding and stormwater management, discharges to impaired water bodies, depleted groundwater and surface water resources, and wastewater management and disposal methods. ❖ Responding to soils or water resources issues that may arise regarding power plant operations. ❖ Conducting investigations to determine if any violations of the program's regulations, the Energy Commission's conditions of certification, or the CA Environmental Quality Act (CEQA) have occurred. ❖ Analysis of one of the largest solar projects in the world for environmental impacts on soil and water resources. This project is designed to generate 500 megawatts using solar energy to generate steam that runs a turbine to generate electricity. ❖ Analysis of another solar project, also one of the largest projects in the world, that uses photovoltaic (PV) technology and is designed to generate 1000 megawatts. ❖ Currently analyzing a cutting-edge project that proposes to minimize the green house impact of the project by injecting the generated CO2 gas underground for long term sequestration. The CO2 would be injected to depths of 5000 ft. or more below ground surface. This project is the first of its kind in the USA and would set the stage for other projects to store CO2 in geologic formations to reduce green house gas emissions.
Dec. 2006-May 2010: **Water Resources Engineer** CA Dept. Water Resources,	❖ In charge of hydraulic modeling and sediment transport for the San Joaquin River restoration project. ❖ Performed 1- and 2-D hydraulic analysis to support restoration

Fresno, CA, USA.	of the San Joaquin River for the purpose of improving spawning/rearing habitat, enhancing floodplain connectivity, and improving riparian corridor.
Dec. 2001-Dec. 2006: **Retained Hydrologist** J.L. Nieber & Associates, Hydrologic Consultants, Lindstrom, Minnesota, USA.	❖ Performed hydrologic analysis and assessment of environmental impact of comtamination incidents on ground water resources, as well as design of remediation plans. ❖ Contaminants analyzed included hydro-carbons, chlorinated solvents, as well as agrichemicals.
Dec. 90 – Dec. 93: **Retained Hydrologist**. BAUMGARTNER ENVIRONICS, INC, Olivia, Minnesota, USA.	❖ Performed assessment of the environmental impact of contamination incidents on groundwater resources, and design of action plans.

Experience - Teaching

Sep. 2003-Sep. 2005: Assistant Professor, Hashemite University, Zarqa, Jordan.	Taught the following courses: ❖ Water and Wastewater Treatment Mehods (Senior) – 1 semester ❖ Wastewater Engineering (Senior level) – 2 semesters ❖ Statics - 3 semesters ❖ Engineering Drawing - 4 semesters ❖ Visual Communication - 4 semesters
June – August, 96, 97, 98, 2000: Army High Performance Computing Research Center, Minneapolis, Minnesota.	❖ The Summer Institute is a summer course offered to promising upper class students from member institutions. The summer course included a ground water flow and transport group that normally had about 4 students from different backgrounds. ❖ Taught and helped teach the Summer Insitute course in hydrology and transport in porous media. ❖ Was part of the team that trained the students to use a particle tracking solute transport code which I developed. ❖ Also trained the group to use the DoD's Ground Water Modeling System, GMS. ❖ In the summer of 2000 I was fully in charge of the whole group. ❖ More infromation about the projects can be on the Summer Institute web site at: http://www.arc.umn.edu/education/SummerInst/
August, 1997: Short course for practitioners, University of Minnesota, Minneapolis, Minnesota, USA.	❖ Taught a short course on the application of the Department of Defense's Ground Water Modeling System, GMS, offered by the American Society of Agricultural Engineers and attended by about 40 professionals and academicians from around the United States as well as several countries around the world.
Mar. 88 - Dec. 92: Teaching Assistant, Dept. of Civil Engineering, University of Minnesota, Minneapolis, Minnesota.	❖ Teaching assistant for the senior courses of Hydrology and Hydrologic Design, and Water Resources Engineering.

DECLARATION OF
Mike Conway, P.G., CHG

I, Mike Conway declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Environmental Protection Office as an Engineering Geologist.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the staff testimony on Soil and Water Resources, for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9 May 2018 Signed: Mike Conway

At: Sacramento, California

Resume for Mike Conway, California Energy Commission, STEP Division, Engineering Office

Education: Master of Science in Geology, California State University, Sacramento, August 2012
Bachelor of Science in Geology, University of California, Davis, August 2003

Certifications: California Professional Geologist (PG), no. 9107
California Certified Hydrogeologist (CHG), no. 1024
Certified Professional in Erosion and Sediment Control (CPESC)
Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD) and Practitioner (QSP)
Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

Experience:

Engineering Geologist: California Energy Commission, Sacramento, CA 2009-Present

- Serve as an expert witness in water resources and technical analyses for power plant siting cases
- Prepare expert testimony in subject areas of hydrogeology, soil erosion, surface water flow
- Lead technical reviewer for Yucca Mountain Waste Repository Environmental Impact Statement
- Prepare expert analyses of state law, ordinances, regulations, and standards applicable to water use
- Perform onsite evaluations of soil and water resource impacts pre- and post-project
- Construct hydraulic and hydrogeologic models (MODFLOW, GIS, WMS) to evaluate resource impacts

Environmental Scientist: Central Valley Water Board, Rancho Cordova, CA 2009

- Wrote municipal storm water permits for Phase I communities in the Central Valley
- Reviewed storm water annual reports for Phase I and II municipalities
- Conducted audits of industrial sites for compliance with storm water permits
- Conducted audits of municipalities for compliance with municipal permits
- Represented Water Board in large technical workshops and other public forums

Environmental Consultant: Wood Rodgers, Inc., Sacramento, CA 2006-2009

- Consulted clients on how to comply with Federal, State and local storm water quality regulations
- Helped public and private sector clients gain State Water Resources Control Board (SWRCB) permit coverage under Large and Small MS4 General Permits, NPDES Permits, CWA Section 401 Permits
- Consulted clients on Army Corps of Engineers, 404 Permitting
- Developed a storm water quality manual for Yolo County
- Prepared Caltrans environmental documentation and design for all project phases
- Drafted water pollution control exhibits using both AutoCAD and MicroStation
- Prepared Caltrans Storm Water Data Reports including cost estimates
- Designed landscaping plans for Caltrans' Modesto Ramp Rehabilitation Project
- Prepared Spill Prevention Control and Countermeasure (SPCC) plans

Storm Water Quality Consultant: Envirosafety Services, Elk Grove, CA 2004-2006

- Wrote site specific SWPPPs to include guidance specific to city, county, and geographical constraints
- Designed exhibits using AutoCAD
- Conducted inspectioas at construction sites throughout the Central Valley for (SWPPP) compliance
- Resolved storm water compliance issues in cooperation with site superintendents and inspectors

Post-Graduate Researcher: Dept. of Land, Air, and Water Resources, U.C. Davis, CA 2003

- Studied the affect of irrigation practices on wetland ecology and water quality
- Independently organized monthly analyses and data processing of selenium contaminated invertebrate, algae, and water samples from the Tulare Lake Drainage District
- Managed concentrated acids, carcinogenic solutions, and final fluorescence measurements
- Compiled research data and presented findings to a team of eight colleagues

DECLARATION OF
Andrea Koch

I, Andrea Koch, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as an Energy Facility Siting Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Traffic and Transportation** for the Stanton Energy Reliability Center based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/16/18 Signed: Andrea Koch

At: Sacramento, California

CALIFORNIA
ENERGY COMMISSION

ANDREA KOCH
PLANNER II – ENERGY FACILITY SITING

Education, Certification & Associations

- Bachelor of Science Degree, Wildlife, Fish and Conservation Biology, University of California, Davis (2002)
- Master of City and Regional Planning, Cal Poly San Luis Obispo (2004)

Experience

California Energy Commission (CEC) – from 12/2009 to Present

Planner II – Traffic and Transportation

Review power plant applications for: traffic and transportation and land use impacts; and compliance with applicable laws, ordinances, regulations, and standards. Coordinate with other staff and agencies to conduct environmental reviews. Write environmental analysis documents. Perform compliance oversight of power plants during construction and operation. Assist junior colleagues with environmental review.

City of Sacramento – from 6/2007 to 7/2009

Assistant Planner – Long-Range Planning

Performed long-range planning for the City of Sacramento. Coordinated review of the Draft 2030 General Plan, a comprehensive citywide land use plan. Prepared Ben Ali and Hagginwood neighborhood plans. Worked with City staff and community members to identify strategies for resolving neighborhood issues, such as infrastructure deficiencies. Reviewed 70 development applications, analyzing their consistency with City policy and providing written feedback to applicants.

County of Santa Cruz – from 6/2005 to 6/2007

Resource Planner II – Current Planning

Reviewed development permit applications to ensure their consistency with regulations for creeks, wetlands, grading, geologic hazards, erosion control, and sensitive plant and animal species. Wrote staff reports analyzing development proposals and providing recommendations to the Environmental Planning Division Manager. Performed an average of 5 weekly pre-construction meetings and final inspections at project sites to ensure that development was consistent with County regulations and required mitigations. Regularly assisted the public with resource planning questions, both in-person and over the phone.

County of Monterey – from 11/2004 to 6/2005

Assistant Planner – Current Planning

1516 Ninth Street, MS 40 ◆ Sacramento, CA 95814 ◆ (916) 654-3850 ◆ andrea.koch@energy.ca.gov

Reviewed development permit applications for consistency with County regulations. Prepared and presented staff reports for development applications. Reports provided recommendations to the Zoning Administrator. Assisted the public with zoning questions, both in-person and over the phone.

DECLARATION OF
OBED ODOEMELAM, Ph.D

I, Obed Odoemelam, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as a Staff Toxicologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony **on Transmission Line Safety and Nuisance** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/15/18

Signed: O Odoemelam

At: Sacramento, California

DECLARATION OF
OBED ODOEMELAM, Ph.D

I, Obed Odoemelam, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as a Staff Toxicologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony **on Waste Management** for the **Stanton Energy Reliability Center** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/15/18

Signed: O Odoemelam

At: Sacramento, California

RESUME

DR. OBED ODOEMELAM

EDUCATION:

1979-1981 University of California, Davis, California. Ph.D., Ecotoxicology

1976-1978 University of Wisconsin, Eau Claire, Wisconsin. M.S., Biology.

1972-1976 University of Wisconsin, Eau Claire, Wisconsin. B.S., Biology

EXPERIENCE:

1989
The Present: California Energy Commission. Staff Toxicologist.

Responsible for the technical oversight of staffs from all Divisions in the Commission as well as outside consultants or University researchers who manage or conduct multi-disciplinary research in support of Commission programs. Research is in the following program areas: Energy conservation-related indoor pollution, power plant-related outdoor pollution, power plant-related waste management, alternative fuels-related health effects, waste water treatment, and the health effects of electromagnetic fields. Serve as scientific adviser to Commissioners and Commission staff on issues related to energy conservation. Serve on statewide advisory panels on issues related to multiple chemical sensitivity, ventilation standards, electromagnetic field regulation, health risk assessment, and outdoor pollution control technology. Testify as an expert witness at Commission hearings and before the California legislature on health issues related to energy development and conservation. Review research proposals and findings for policy implications, interact with federal and state agencies and industry on the establishment of exposure limits for environmental pollutants, and prepare reports for publication.

1985-1989 California Energy Commission.

Responsible for assessing the potential impacts of criteria and noncriteria pollutants and hazardous wastes associated with the construction, operation and decommissioning of specific power plant projects. Testified before the Commission in the power plant certification process, and interacted with federal and state agencies on the establishment of environmental limits for air and water pollutants.

1983-1985 California Department of Food and Agriculture.

Environmental Health Specialist.

Evaluated pesticide registration data regarding the health and environmental effects of agricultural chemicals. Prepared reports for public information in connection with the eradication of specific agricultural pests in California.

DECLARATION OF
Scott Polaske

I, Scott Polaske, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as Energy Resources Specialist III Supervisor.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepared the staff testimony on **Visual Resources** for the Stanton Energy Reliability Center based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/14/18 Signed: Scott Polaske

At: Sacramento, California

CALIFORNIA
ENERGY COMMISSION

SCOTT POLASKE
PLANNER I

Education, Certification & Associations

- Bachelor of Arts, Environmental Studies, University of California at Santa Barbara (2014)

Experience

California Energy Commission (CEC) – from 5/2015 to present

Planner I

As a staff Planner with the Energy Commission, Mr. Polaske analyzes the transportation, land use and visual components of energy facilities siting applications to assess resource impacts, develop mitigation, and to evaluate compliance with applicable federal, state, and local, laws, ordinances, regulations, and standards. Mr. Polaske also takes lead on cumulative impact analyses, requiring coordination with local planning juristictions as well as with Energy Commission staff to ensure the best available information on cumulative projects is include in staff analyses.

Projects

- Puente Power Project – assisted in cumulative and alternatives analysis
- Alamitos Energy Center – assisted in cumulative and alternatives analysis
- Chemehuevi Community Center Solar Grant Proposal – assisted in grant review
- Pomona Repower Project SPPE – land use analysis
- Mission Rock Energy Center – transportation analysis
- Stanton Energy Reliability Center – visual resources analysis
- McLaren Backup Generating Facility SPPE – cumulative analysis
- Hesperia Farm Solar Photovoltaic Project Initial Study – grant review
- Fly Monterey Solar Program Initial Study – grant review
- Del Mar EIR for Civic Center Energy Efficiency Enhancements – grant review
- Operational Power Plant Amendments – amendement impact review

1516 Ninth Street, MS 40 ◆ Sacramento, CA 95814 ◆ (916) 651-3777 ◆ Scott.Polaske@energy.ca.gov

DECLARATION OF
Edward Brady

I, Edward Brady, declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Engineering Office as a Mechanical Engineer.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepared the staff testimony for the **Power Plant Efficiency, Power Plant Reliability** and **Facilities Design** technical sections for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 23, 2018 Signed: Edward J. Brady

At: Sacramento, California

Edward James Brady
Mechanical Engineer

Summary of Experience

Forty-four years of experience in the profession of mechanical engineering as a staff engineer to the California Energy Commission, engineering consultant, design group supervisor in a major power plant project, senior engineer for a gas and electric utility, sales and design engineer for a mechanical contractor, and instructor in a community college.

Education

- BSME, Santa Clara University, 1972
- Graduate Engineering Studies, Santa Clara University
- Graduate Business Studies, University of San Francisco
- Continuing Education, UC Extension

Professional Registration

- Mechanical Engineer (M17924) California
  (25505) Washington
  (33082) Colorado
  (9248, Inactive) Nevada

- Civil Engineer (C36174) California

Affiliations

- American Society of Mechanical Engineers (ASME), Life Member
- American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Life Member
- International Code Council (ICC), Member

Curriculum Vitae

2011 – Present	**Staff Mechanical Engineer**, California Energy Commission, Siting, Transmission, and Environmental Protection Division (STEP). Performs analysis of generating capacity, reliability, efficiency, noise and vibration, and the mechanical, civil, electrical, and structural aspects of power plant siting and construction cases.
1988-2011	**Principal Mechanical Engineer,** Brady Engineering. Provided design and consulting services for the permitting and construction of industrial and commercial facilities, and residential buildings in the fields of heating, ventilating air conditioning (HVAC), plumbing, fire protection and energy analyses.
1984-1988	**Design Group Supervisor,** Joint PG&E and Bechtel Project. Worked as the mechanical group supervisor responsible for the design modifications required for the licensing of Diablo Canyon Power Plant, Units 1 and 2.
1980-1988	**Senior Mechanical Engineer,** PG&E Civil Engineering Department, Architectural Section. Provided work group supervision and design of building mechanical systems for common utility plant facilities (CUP) and balance of plant systems for power production facilities.
1986-1990	**Member**, Fire Sprinkler Advisory Board, City and County of San Francisco . Review and provide recommendments for the upcoming revisions to the San Francisco Building Code, California Building Code and NFPA Standards.
1977-1980	**Mechanical Engineer,** PG&E Civil Engineering Department, Architectural Section. Provided HVAC and plumbing design for CUP and power production facilities.
1974-1977	**Instructor,** San Francisco Community College District; John O'Connell Evening School. Provided apprenticeship training in the technical fields of HVAC and refrigeration.
1977	**Design Engineer,** Charles and Braun Consulting Engineers, San Francisco. Worked as a staff designer in the fields of HVAC and plumbing for commercials facilities include a sentence detention facilities and a proto-type regional facility for a federal agency.

1972-1976 **Sales and Design Engineer,** Scatena York Company, San Francisco. Worked as a sales and design engineer for a refrigeration contractor, which provided design and installation of refrigeration systems for supermarkets and cold storage facilities.

Power Plant/Utility Experience

California Energy Commission, *preparation of staff analyses of Laws, Ordinances, Regulations and Standards (LORS) in the technical areas of Facilities Design, Noise and Fire Protection.*

, Stanton Energy Reliabillity Center (SERC), 98 MW, two (2) LM6000 PC hybrid EGT(Enhanced Gas Technology) combustion turbines and 10MW/5 MWh Lithium-Ion battery storage system.

, Mission Rock Energy Center (MREC), 255 MW, five (5) LM6000 combustions turbines

, Puente Power Project (Puente), 262 MW Simple Cycle gas combustion turbine with synchronous condenser for part-load performance control, Ventura County

, Rio Mesa Solar Electric Generation Station (RMSEGS). 500 MW Solar Power Tower. Riverside County

, Hidden Hills Solar Electric Generating Station (HHSEGS). 500 MW Solar Power Tower. Inyo County.

, Hydrogen Energy California (HECA). 405 MW Combined Cycle, Fuel Gasification, CO_2 Sequestration, Ammonia Production. Kern County

, Quail Brush Generating Project (QBGP). 1100 MW Reciprocating Engine Electric Generation. City of San Diego

, Huntington Beach Energy Project (HBEP). 939 MW Combined Cycle. City of Huntington Beach.

, Redondo Beach Energy Project (RBEP). 496 MW Combined Cycle. City of Redondo Beach, Los Angeles County.

, Alamitos Energy Center (AES). 1936 MW Combined Cycle. City of Los Alamitos.

, Palen Solar Electric Generating Station (PSEGS). 500 MW Power Tower, Licensing Amendment. Riverside County, California.

Bottle Rock Power Plant. 55 MW Geothermal Facility, Repowering Amendment. Lake County, California

PG&E , Diablo Canyon Power Plant, Units 1 and 2. Licensing of safety related systems.
, Diablo Canyon Power Plant, Administration Building, SLO County Emergency Response Building

, Geysers Power Plant, Units 16, 17, 20, and 21. Ventilation and cooling for turbine building, hazardous waste disposal facilities, and administration building.

, Helms Pumped Storage Facility, Kern County. Smoke control ventilation for underground transformer vaults.

, Humboldt No. 3, Eureka. Decommissioning of nuclear facility and construction of hazardous materials storage and handling.

, Moss Landing Power Plants, Units 1 through 6, Monterey County

, Morro Bay Power Plant, Morro Bay

, Hunters Point Power Plant, San Francisco

, Potrero Power Plant, San Francisco. Combined Cycle

, Gas Transmission Facilities, Line 300 and 400, Topock and Corning Compressor Stations, McDonald Island and Brentwood Gas Storage Facilities

, Central Computer Facilities, San Francisco and Vacaville

, 77 Beale Street, San Francisco. Energy Management System including Fire and Life Safety (NFPA 101).

, 215 Market Street, San Francisco. Boiler Replacement

, Underground Fuel Tank Replacement. Upgrade of more than 500 gallon fuel storage tanks to meet second generation, double containment requirements.

, Contra Costa Power Plants, Unit 1 through 6, Water Treatment

, Pittsburg Power Plants, Unit 1-5, Water Treatment Facilities

, Avon, Martinez and Oleum (AVO), Water Treatment Upgrade

, Tiger Creek Powerhouse, North Fork Feather River

, Kirchoff No. 2 Pumped Storage Facility.

, Technical Support Services, Marketing Department

South Bay Sanitary Authority, 1400 Radio Road, Redwood Shores. Gas piping and boiler conversion.

DECLARATION OF
Garry Maurath, Ph.D., P.G., CHG

I, Garry Maurath declare as follows:

I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection (STEP) Division, Environmental Protection Office as an Engineering Geologist.

A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

I prepare the staff testimony on Geology and Paleontology, for the Stanton Energy Reliability Center based on my independent analysis of the Application For Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: Gary Maurath Signed: 7 May 2018

At: Sacramento, California

Garry Maurath, Ph.D., P.G., C.Hg.
Engineering Geologist

Experience Summary

Dr. Maurath has 40+ years of experience in the design, management, and execution of geologic, hydrogeologic, geotechnical, geophysical, geothermal, and environmental investigations. Dr. Maurath has conducted numerous licensing studies and performed feasibility studies, site assessments, and construction support for power plants, hazardous waste facilities, dams, canals, tunnels, levees, high-temperature geothermal projects, strategic fuel depots, solid waste landfills, hazardous, toxic and radioactive waste (HTRW) facilities, and both permanent and tactical military infrastructure. He has been responsible for examining and evaluating present and potential geology, paleontology, hydrogeology, and environmental conditions for the planning, design, construction, maintenance, and/or clean-up of numerous facilities. This work has been performed in urban, rural, and remote settings.

His work has included CERCLA and RCRA site remedial investigations and feasibility studies, surface geologic mapping in volcanic, metamorphic, and sedimentary terrain, surface geophysical surveys, borehole siting, drilling, logging, aquifer evaluation and testing, subsurface mine evaluations, mine sampling, construction dewatering, and mercury soil surveys. Dr. Maurath has been responsible for the execution of hazardous waste, low-level, and high-level radioactive waste projects within local, state and federal regulatory guidelines in US EPA regions III, V and IX. He has been involved in the preparation of NEPA and CEQA documentation, EISs, EIRs, NDs, MNDs, NPDES permits, and numerous license applications for the Federal Energy Regulatory Commission and the California Energy Commission.

Dr. Maurath has been a senior scientist and managed projects for small, medium, and large size companies; local, state, and federal government agencies; and non-profit organizations. He has worked with or for SMUD, PG&E, Calpine, LADWP, MWD, DWR, California Geological Survey, U.S. Army Corps of Engineers, and several DOE facilities/national laboratories, including Los Alamos, SANDIA, INEL, Savannah River, Maxey Flats, and Hanford. His career has given him the opportunity to work in more than 26 states and 21 countries throughout the world.

Selected Project Experience [technical position/project name/location/lead agency or owner]

- Engineering Geologist, North of the Delta Off-stream Storage (NODOS) Project [Sites], US Bureau of Reclamation
- Engineering Geologist, North Umpqua River Project, Roseburg, Oregon
- Engineering Geologist, Piñon Pine Power Project, Sierra Pacific Power Company
- Engineering Geologist, Protected Fuel Depots Feasibility Study, Kuala Lumpur, Malaysia, Malaysian Ministry of Defense
- Engineering Geologist, Sanitary Landfill Siting Investigation, Fort Drum, New York, US Army Corps of Engineers
- Engineering Geologist, Sharp Army Depot Building S-4 Geohazard Assessment, US Army Corps of Engineers
- Engineering Geologist, Site Characterization of Superconducting Super-Collider (SSC) Sites, New York, NY UDC.
- Engineering Geologist, Union Valley Penstock Bifurcation Study, Upper American River, CA, SMUD
- Engineering Geologist, Upper Gorge Bypass Power Plant, Los Angeles Department of Water and Power
- Environmental Geologist, Gardena Sumps, Gardena, California, Atlantic Richfield
- Environmental Geologist, Low-level Radioactive Waste Disposal Site, Moorehead, KY, Maxey Flats Steering Committee.
- Environmental Geologist, Regulatory Compliance and Emergency Reporting Requirements, EG&G
- Field Coordinator, Feather River West Levee Rehabilitation Project, Sutter Butte Flood Control Agency and CA DWR
- Geochemist, Office of Nuclear Waste Isolation Licensing Project Manager, Columbus, OH, Battelle Memorial Institute
- Geologist – Geology and Soils, Supplemental CEQA Document - Slab Creek, SMUD.
- Geologist, Alternative Energy Feasibility Study, Ohiopyle State Park, Pennsylvania, PA Department of Natural Resources
- Geologist, Assessment of Geothermal and Precious Metal Prospects, Western United States, AMAX Exploration
- Geologist, Clearlake Hot Dry Rock Demonstration Project, Clearlake, CA, California Energy Commission
- Geologist, Hydropower Relicensing EIS's, California, Federal Energy Regulatory Commission
- Geologist, Paleoliquefaction Studies along the Eastern Seaboard of the United States, Nuclear Regulatory Commission
- Geologist, Public Hearings on the North Carolina Low-Level Waste Siting
- Geologist, Rocky Point Pumped Storage Project, Taylor Park, Colorado, Natural Energy Resource Company
- Geologist, Statewide Liquid Geothermal Resource Evaluation, California, California Energy Commission
- Geologist/Paleontologist, Alamitos Energy Center, Huntington Beach, California, California Energy Commission
- Geologist/Paleontologist, Blyth Solar Power Project, Blyth, California, California Energy Commission
- Geologist/Paleontologist, Carlsbad Energy Center Project, Carlsbad, California, California Energy Commission
- Geologist/Paleontologist, El Segundo Power Project, El Segundo, California, California Energy Commission
- Geologist/Paleontologist, Gateway Generating Station, Antioch, California, California Energy Commission
- Geologist/Paleontologist, Geysers (Lakeview; NCPA #2), Calistoga, California, California Energy Commission
- Geologist/Paleontologist, Humboldt Bay Project, Humboldt, California, California Energy Commission
- Geologist/Paleontologist, Huntington Beach Energy Center, Huntington Beach, California, California Energy Commission
- Geologist/Paleontologist, Mission Rock Energy Center, Santa Paula, California, California Energy Commission
- Geologist/Paleontologist, Oakley Power Project, Oakley, California, California Energy Commission
- Geologist/Paleontologist, Pomona Repower Project, Pomona, California, California Energy Commission
- Geologist/Paleontologist, Pio Pico Energy Project, California, California Energy Commission
- Geologist/Paleontologist, Puente Power Project, Oxnard, California, California Energy Commission

- Geologist/Paleontologist, Ravenswood-Cooley Landing Reconductoring, Menlo Park and East Palo Alto, CPUC
- Geologist/Paleontologist, Stanton Energy Reliability Center, Stanton, California, California Energy Commission
- Hydrogeologist, Arco 5550 – City of Pomona Well-29, California, BP/Atlantic Richfield
- Hydrogeologist, ARCO Alegria/Gaviota Marine Terminal, Gaviota, California, BP/Atlantic Richfield
- Hydrogeologist, Assessment of 14 U.S. EPA Superfund Sites, CA, NJ, VA, OH, PA, and NY, US EPA
- Hydrogeologist, Auburn Tunnel Pumping Project, Auburn, California, City of Auburn
- Hydrogeologist, Defense Fuel Supply Point Ozol, Benicia, California, U.S. Army Corps of Engineers
- Hydrogeologist, Delta Habitat Conservation and Conveyance Project (DHCCP), CA DWR
- Hydrogeologist, Destruction of Wells N-11, N-18, & N-19, Sacramento, CA, Sacramento Suburban Water District
- Hydrogeologist, Diamond Valley Reservoir, Hemet, CA, Metropolitan Water District of Southern California
- Hydrogeologist, Geff Alternative Site Aquifer Characterization, Chicago, IL, State of Illinois
- Hydrogeologist, Groundwater Modeling of Alternative Low-level Waste Vault Designs, Savannah River, Westinghouse
- Hydrogeologist, Groundwater Monitoring in the Globe Mining District, Globe Arizona, Gila River Indian Community
- Hydrogeologist, Hydrogeologic Assessment of Potential Hazardous Waste Sites, San Francisco Bay Area, CA, PG&E
- Hydrogeologist, Kern Water Bank Evaluation Project, Kern Water Bank
- Hydrogeologist, Lake Skinner Groundwater Seepage Adjudication, Metropolitan Water District of Southern California
- Hydrogeologist, Los Baños Grandes Groundwater Resource Evaluation, Los Baños, California, CA DWR
- Hydrogeologist, Municipal Water Supply Well Siting, Design, & Construction, Alleghany County Water District
- Hydrogeologist, Mt. Hope Pumped Storage Project, Mt. Hope, New Jersey, Federal Energy Regulatory Commission
- Hydrogeologist, Platte River EIS, Wyoming and Nebraska, Federal Energy Regulatory
- Hydrogeologist, Sacramento Ethanol and Power Cogeneration Project, Sacramento, CA, ARK Energy
- Hydrogeologist, Sutter Power Plant AFC with the California Energy Commission, Sutter County, Calpine
- Hydrogeologist, Upper Rio Grande Flood Control Sys. Replacement, TX, Int. Boundary & Water Com.- US & Mexico
- Hydrogeologist, Vinvale Terminal, Southgate, California, BP/ARCO
- Hydrogeologist, Well 23 Assessment, Sacramento, CA, Sacramento Suburban Water District
- Hydrogeologist, Well 6 Destruction and Re-design, Sacramento, CA, Sacramento Suburban Water District
- Hydrogeologist, Well15 Rehabilitation, Rio Linda, CA, Rio Linda Elverta Community Water District, Rio Linda
- Independent Technical Reviewer, Calaveras Dam Replacement Project
- Independent Technical Reviewer, Diablo Canyon Nuclear Power Plant, Diablo Canyon, California, CEC
- Independent Technical Reviewer, Panama Canal Pacific Access Channel Project #4, Panama Canal Authority.
- Independent Technical Reviewer, Searchlight Wind Energy Project EIS, Bureau of Land Management
- Program QA/QC Manager, Urban and Non-Urban Evaluation Program (ULE/NULE), Sacramento, California, CA DWR
- Project Manager, Castaic Power Plant FERC Relicensing, Los Angeles Department of Water and Power (LADWP
- Project Manager, Dos Pueblos Pipeline Removal Project, Goleta, California, BP/Atlantic Richfield
- Project Manager, Hanford, Technical Baseline Studies, Hanford, Washington, Westinghouse Hanford Company
- Project Manager, Los Angeles Terminal, Los Angeles, California, Conoco-Phillips
- Soils Analyst, Soil Trafficability Surveys, Federal Republic of Germany, U.S. Army Corps of Engineers
- Subject Mater Expert - California Geology, CA Board of Professional Engineers, Land Surveyors, and Geologists
- Subject Mater Expert - Hydrogeology, CA Board of Professional Engineers, Land Surveyors, and Geologists
- Task Order Manager, Non-Urban Levee Evaluation Project (NULE), Sacramento Delta, California, CA DWR

Education

- PhD/Geology/1989/Kent State University, OH
- MS/Geology/1980/Kent State University, OH
- BS/Geology/1974/Lehigh University, PA

Registration

- 2008/Certified Hydrogeologist/CA/#906
- 1992/Professional Geologist/CA/#8346
- 1985/HAZWOPER/OHSA
- 1991/HAZWOPER Supervisor Certification/OHSA

Professional Societies/Affiliates

- Sigma Xi, Scientific Research Society, Life Member
- Association of Environmental and Engineering Geologists (former Finance Committee co-chair and member of the Board of Directors)
- Groundwater Resources Association of California

Publications

Dr. Maurath has more than 40 publications covering topics including paleoliquefaction, terrestrial heat flow, numerical modeling, hydrogeology, nuclear waste, hazardous waste, and geothermal energy. He is co-editor of *Geology of Sacramento*, scheduled to be published in September 2018.

Academia

Dr. Maurath has taught undergraduate courses in Physical Geology, Hydrogeology, Environmental Habitats, and Laboratory Safety; and graduate level courses in Geology of the Bahamian Platform, Carbonate Deposition, Reef Ecology, Data Management, and ICP Laboratory Techniques for Trace Element Geochemistry. Dr. Maurath has been affiliated with Kent State University, University of California at Davis, California State University Sacramento, Monmouth College, and the University of St. Francis.

DECLARATION OF
MARK HESTERS

I, Mark Hesters, declare as follows:

1. I am presently employed by the California Energy Commission in the Strategic Transmission Planning and Corridor Designation Office of the Siting, Transmission, and Environmental Protection Division as a Senior Electrical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Transmission System Engineering for the Stanton Energy Reliability Center based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/18/18 Signed: _____

At: Sacramento, California

Mark Hesters
Associate Electrical Engineer

Mark Hesters has fourteen years of experience in electric power regulation. He worked in the Engineering Office of the California Energy Commission's Energy Facilities Siting & Environmental Protection Division since 1998 providing analysis of California transmission systems and testimony on transmission systems in several Commission power plant certification processes. Prior to that Mark worked in the CEC's Electricity Analysis Office providing lead analysis on Southern California Edison resource issues and modeling support for all areas of California. He holds a B.S. degree from the University of California at Davis in Environmental Policy Analysis and Planning.

DECLARATION OF
John Hope

I, **John Hope**, declare as follows:

1. I am presently employed by **California Energy Commission** in the **Environmental Protection Office** of the **Energy Facilities Siting Division** as a **Planner II**.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Alternatives**, for the **Stanton Energy Reliability Center project**, based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 5/15/18 Signed: 

At: Sacramento, California

CALIFORNIA
ENERGY COMMISSION

JOHN HOPE
Environmental Planner II

Education, Certification & Associations

- Bachelor of Science, City and Regional Planning, California Polytechnic State University San Luis Obispo (1999)

Experience

California Energy Commission (CEC) – from 12/2011 to present

Environmental Planner II

As part of the Environmental Protection division, he prepares environmental documentation for proposed energy facilities for the Commission as required by the California Environmental Quality Act (CEQA). Specifically, he writes technical analyses for facility siting cases and planning studies in the areas of socioeconomics, environmental justice, land use, traffic and transportation, and visual resources, along with formulating solutions and mitigation unique to each individual energy facility. He provides expert technical expertise and servea as a member of inter-disciplinary team that evaluates potential environmental and socioeconomic effects of proposed power plants, policies, and plans for energy development in order to satisfy the requirements of the Warren-Alquist Act and CEQA.

AECOM – from 02/2010 to 07/2011

Noise Analyst

He served as an assistant project manager, environmental planner, or air quality/noise analyst for various CEQA/NEPA documents. His work focused on preparing environmental setting and impact analysis sections, such as land use, traffic, public services, for projects related to infrastructure improvements, residential development, fairgrounds, industrial expansion, business parks, mixed-use developments, and economic appraisal. He used various modeling techniques along with SoundPLAN, a software-based noise prediction modeling program, to assess project-generated noise levels in an environment. Through the use of SoundPLAN, he graphically mapped and visually evaluated project-generated noise levels based on principles of acoustics. He also learned to use SoundPLAN to model noise maps, design traffic noise mitigation, and predict combined noise levels. His experience in long-range planning also involved preparation of various elements for general plans and community plans.

EDAW | AECOM – from 09/2004 to 06/2009

Associate Environmental Planner

He wrote technical sections and managed environmental documents that analyzed, described, and informed the public and decision-makers the potential environmental impacts of implementing development projects, including needed on-site and offsite infrastructure. He supervised preparation of environmental documents utilizing information from the client (i.e., state, county, city) and other professionals (e.g., air quality consultant, traffic engineers) to conduct environmental impact analysis of development projects. He also wrote sections and

conducted research for general plans and specific plans. He worked as part of a team in preparing these documents to meet the requirements of state and federal permit regulations. He diligently maintained budgets and worked within stringent schedules as part of managing preparation of environmental and community planning documents with local agencies, cities and counties, and environmental specialists. He prepared scopes of work and proposals for new work opportunities.

Stantec – from 07/2002 to 08/2004

Project Planner

He was responsible for providing land planning and environmental impact analysis in an environmental engineering firm overseeing various environmental remediation projects throughout northern California. He conducted hands-on oversight of remediation projects to assess the onsite environmental impacts and analyzed their successfulness. He was relied upon to provide my land planning, environmental impact analysis, and entitlement processing expertise. He was also responsible for providing assistance to land developers through the entitlement process including preparing development applications, preparing due diligence reports, and representation of the project to the public-at-large. He assisted cities and counties with the preparation of environmental documents and the processing of proposed land development projects. He managed the implementation of land development projects including large residential subdivisions, commercial development, public facilities, and business parks by coordinating efforts being pursued by other associates including surveyors, engineers, environmental specialists, public agencies, and the developer themselves. He also wrote technical sections that analyzed the environmental impacts associated with large infrastructure improvement projects and prepared the environmental document articulating the team's findings. Co-workers relied upon him to provide land use and environmental planning expertise towards a team effort.

Pacific Municipal Consultants – from 07/1999 to 07/2002

Assistant Planner

As part of my first work experience he evaluated proposed development projects, provided code enforcement, and assisted the public-at-large. He gained experience in long-range planning from diligent researching, and writing technical sections for general plans and environmental documents. As part of a team effort, he was responsible for the expedited review and management of proposed development applications through the entitlement process and conducting environmental review while working as a land use planner for the City of Elk Grove. He was responsible for processing and reviewing current planning projects applications such as subdivision maps, use permits, design review applications, staff level discretionary review, and other entitlements as assigned. As part of this process, he evaluated proposed projects with the requirements of the municipal code and general plan, presented development projects, and portrayed issues surrounding the project to decision-makers and the public through writing staff reports and articulating my professionalism to Planning Commissions and City Councils. In addition, he worked on the City of Elk Grove's first General Plan by writing and analyzing all the quantitative and statistical data for the Housing element and administered public meetings and workshops. I wrote the draft Housing Element, started the State certification process with the Department of Housing and Community Development, and assisted with the preparation of other required elements of their General Plan.

DECLARATION OF
Mary Dyas

I, Mary Dyas, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a Planner III.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on Compliance Conditions and Compliance Monitoring Plan, for the Stanton Energy Reliability Center, based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 21, 2018 Signed: 

At: Sacramento, California

MARY DYAS
CALIFORNIA ENERGY COMMISSION – COMPLIANCE PROJECT MANAGER

PROFESSIONAL EXPERIENCE

Planner II/III – Energy Facilities Compliance Project Manager *05/01/2008 to Present*
Siting Transmission and Environmental Protection Division - Compliance Office
California Energy Commission, Sacramento, California

Compliance Project Manager – Provide oversight of energy facility construction and operation activities to ensure compliance with conditions of certification. Function as team leader for all compliance monitoring activities, processing of post-certification amendments, complaints, and facility closures. Team leader on projects filed with the Energy Commission including renewable energy projects (Blythe Solar Power Project - PV) and natural gas-fired energy projects (Blythe Energy Project) in the licensing, construction and operational phases of each project.

Planner I/II – Energy Facilities Siting Project Manager *01/18/2006 to 04/30/2008*
Siting Transmission and Environmental Protection Division - Siting Office
California Energy Commission, Sacramento, California

Siting Project Manager – Provide day-to-day management of complex and controversial energy facility siting projects and renewable solar projects including: Carrizo Energy Solar Farm Project, Bullard Energy Center, El Centro Unit 3 Repower Project, and Chevron Replacement Project. Planning, organizing, and directing the work of an interdisciplinary environmental and engineering staff team engaged in the review of complex or controversial energy facility siting Applications for Certification.

Energy Analyst / Associate Energy Specialist *09/27/2002 to 01/17/2006*
Transportation Division - Natural Gas Office
California Energy Commission, Sacramento, California

LNG Research – Coordinating and assisting with the facilitation of monthly Interagency LNG Working Group meetings involving cooperative federal, state, and local agencies; assisting with report writing conducting LNG facility assessments; Organizing/facilitating public workshops and preparing status reports on LNG facility development for use by Commissioners and Governor's Office, as well as reviewing and analyzing LNG-related legislative bills in California; Creating and maintaining the Commission LNG webpage, researching and preparing numerous LNG fact sheets for public education, and gathering information on new technology, tracking new LNG projects, and LNG market information.

Office Technician / Energy Analyst *06/27/2000 to 09/27/2002*
Siting Transmission and Environmental Protection Division – Siting/Compliance Office
California Energy Commission, Sacramento, CA

Assistant Siting Project Manager – Assisting energy facility project managers with organization of and conducting workshops and public meetings between staff and power plant developers, other governmental agencies, private organizations, and the public. Also assisting with the reviewing, evaluating and editing of project correspondence, reports, and testimony as well as assisting project secretaries, and Office Managers as needed. Also performed all the same duties in relation to the Emergency Power Plant Permitting 21-day, 4-month, 6-month and 12-month projects.

EDUCATION

Bachelor of Science degree in Biological Sciences *California State University, Sacramento ~ 1995*

Preparation Team

STANTON ENERGY RELIABILITY CENTER (16-AFC-01)
FINAL STAFF ASSESSMENT
PREPARATION TEAM

Executive Summary ..... John Heiser, AICP
Introduction ..... John Heiser, AICP
Project Description ..... John Heiser, AICP

Environmental Assessment

Air Quality ..... Tao Jiang, Ph.D., P.E. and David Vidaver
Biological Resources ..... Ann Crisp and Tia Mia Taylor
Cultural Resources ..... Matthew Braun and Mourkas Melissa
Environmental Justice ..... Ellen LeFevre and John Heiser
Hazardous Materials Management ..... Brett Fooks, P.E. and Geoff Lesh, P.E.
Land Use ..... Mark R. Hamblin
Noise and Vibration ..... Christopher Dennis and Shahab Khoshmashrab
Public Health ..... Huei-An (Ann) Chu, Ph.D.
Socioeconomics ..... Ellen LeFevre
Soil and Water Resources. Abdel-Karim Abulaban, Ph.D., P.E. and Mike Conway, PG, CHG
Traffic and Transportation ..... Andrea Koch, Tao Jiang, Ph.D., P.E.
Transmission Line Safety and Nuisance ..... Obed Odoemelam, Ph.D.
Visual Resources ..... Scott Polaske
Waste Management ..... Obed Odoemelam, Ph.D.
Worker Safety and Fire Protection ..... Brett Fooks, P.E. and Geoff Lesh, P.E.

Engineering Assessment

Facility Design ..... Shahab Khoshmashrab and Edward Brady
Geology and Paleontology ..... Garry Maurath, Ph.D., PG, CHG
Power Plant Efficiency ..... Edward Brady and Shahab Khoshmashrab
Power Plant Reliability ..... Edward Brady and Shahab Khoshmashrab
Transmission System Engineering ..... Mark Hesters

Alternatives ..... John Hope
Compliance Conditions and Compliance Monitoring Plan ..... Mary Dyas
Project Attorney ..... Lisa DeCarlo and Kerry Willis
Project Assistant ..... Marichka Haws